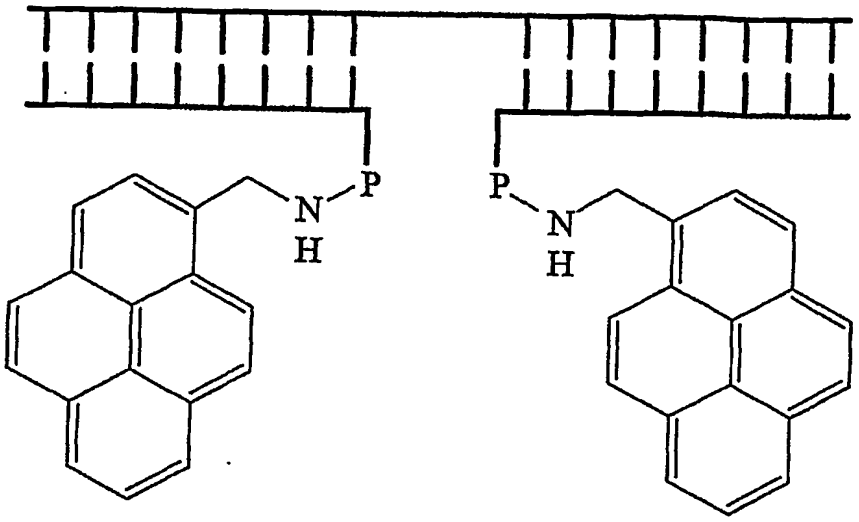
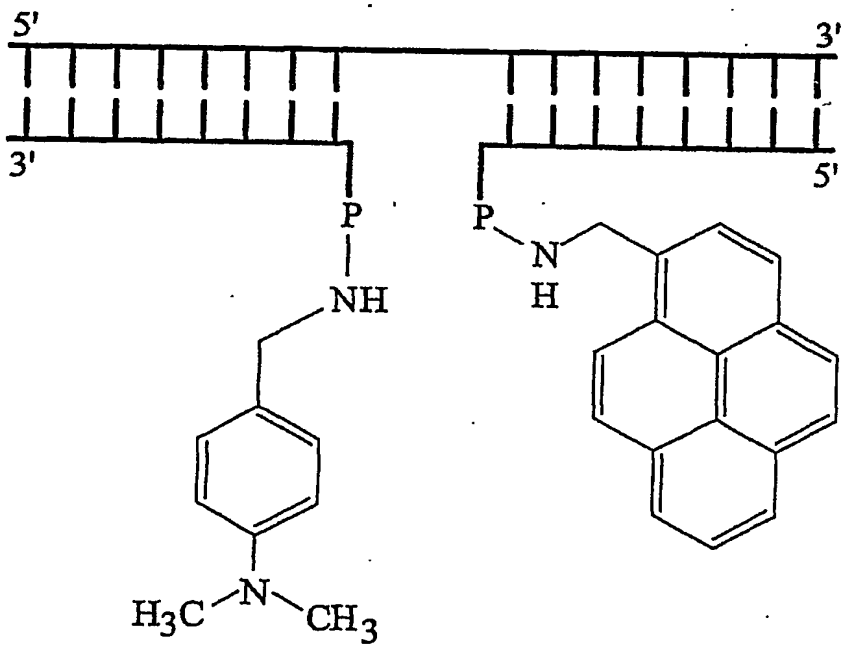
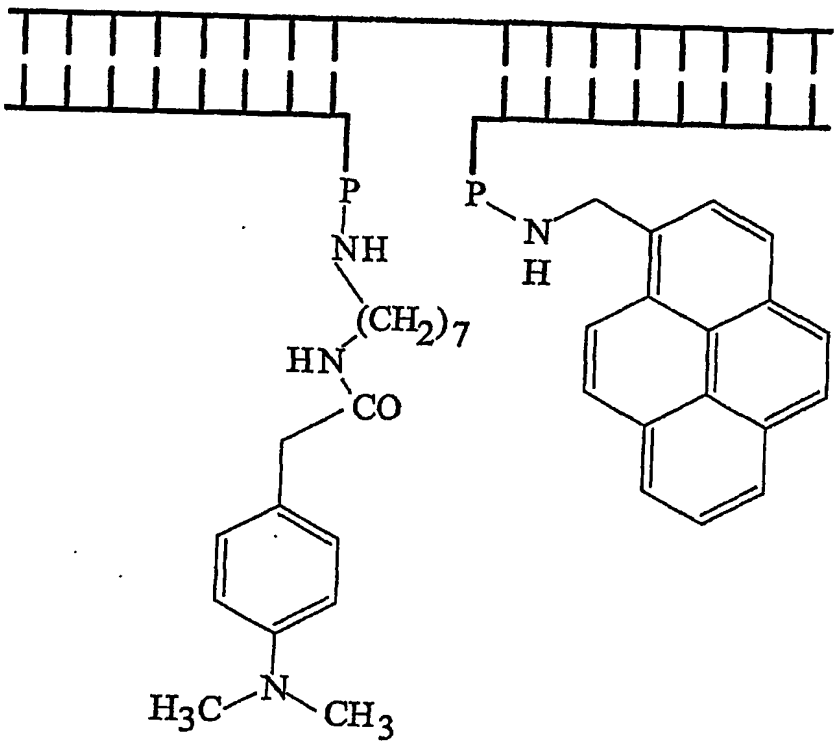
SP-1



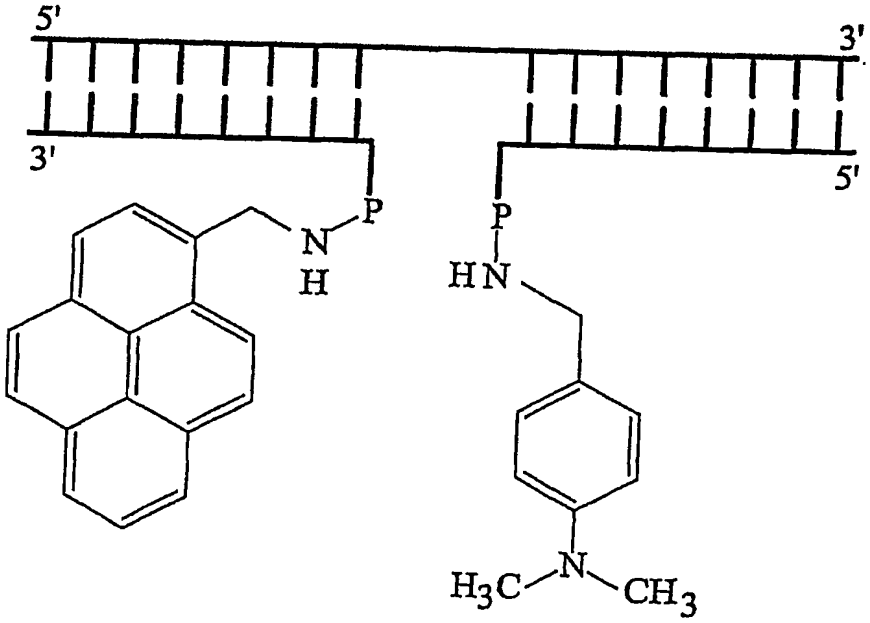
SP-2



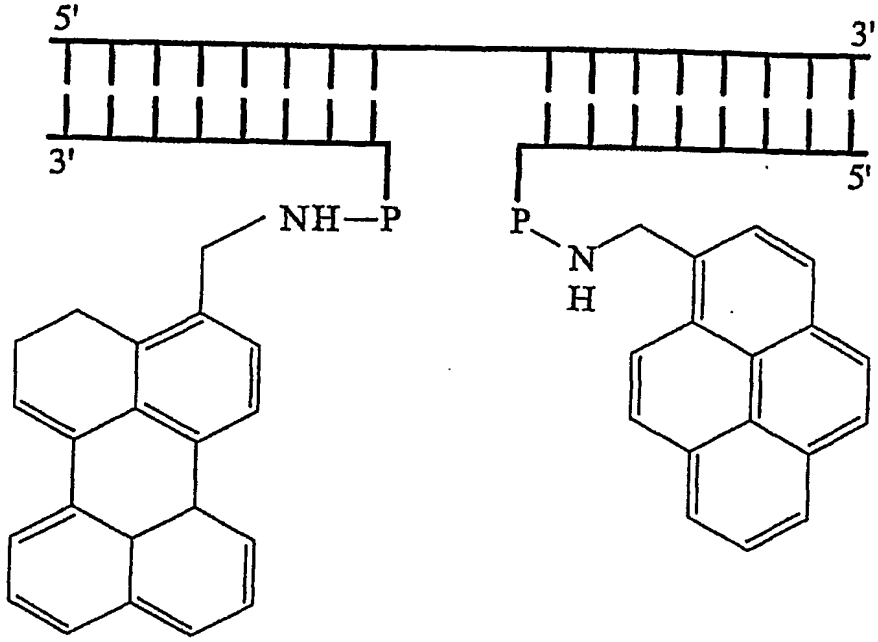
SP-3



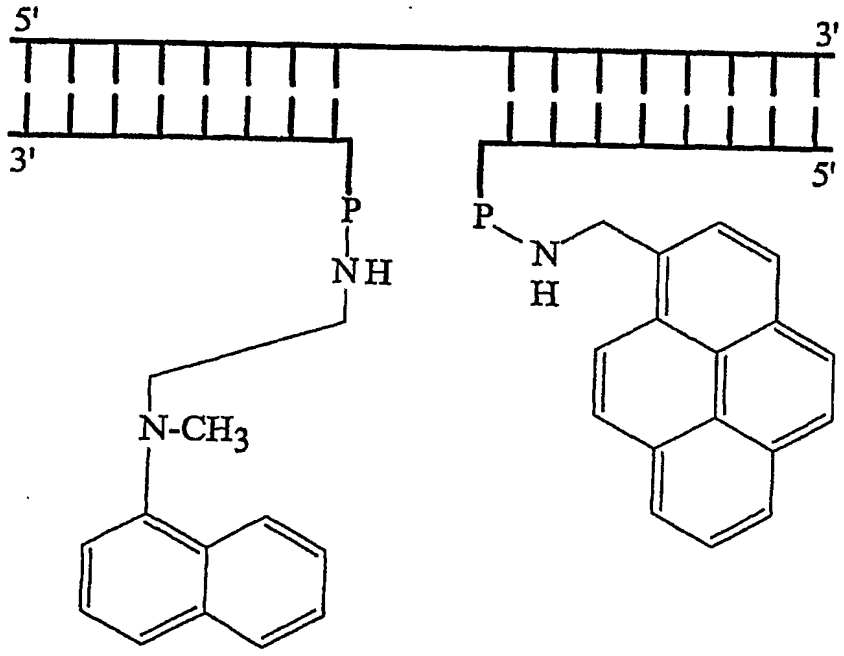
SP- 4



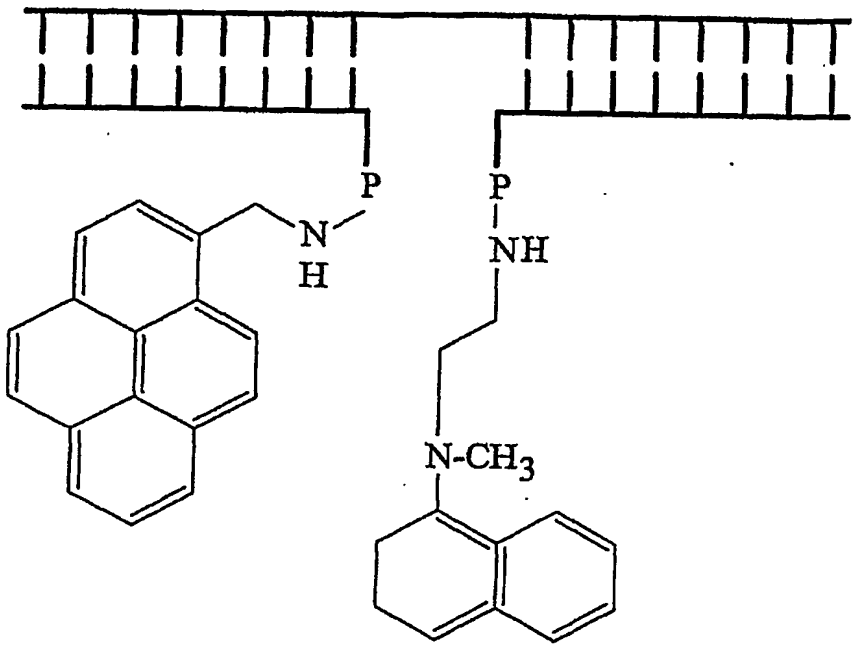
SP-17



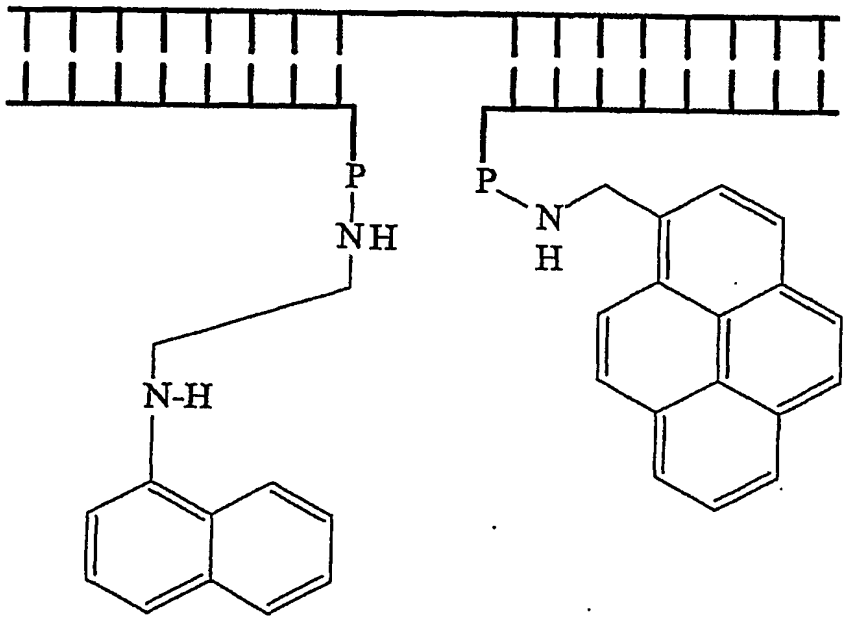
SP-18



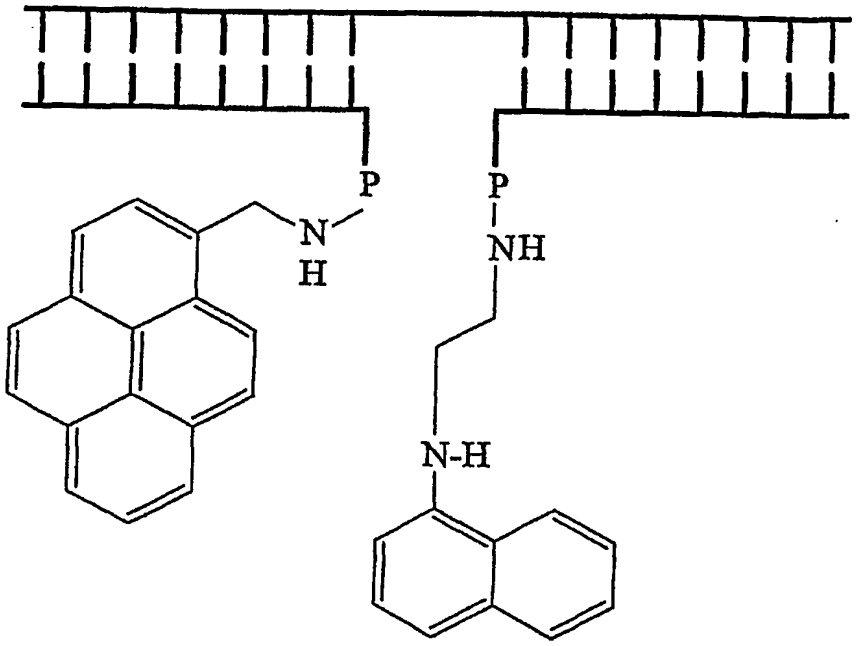
SP-19



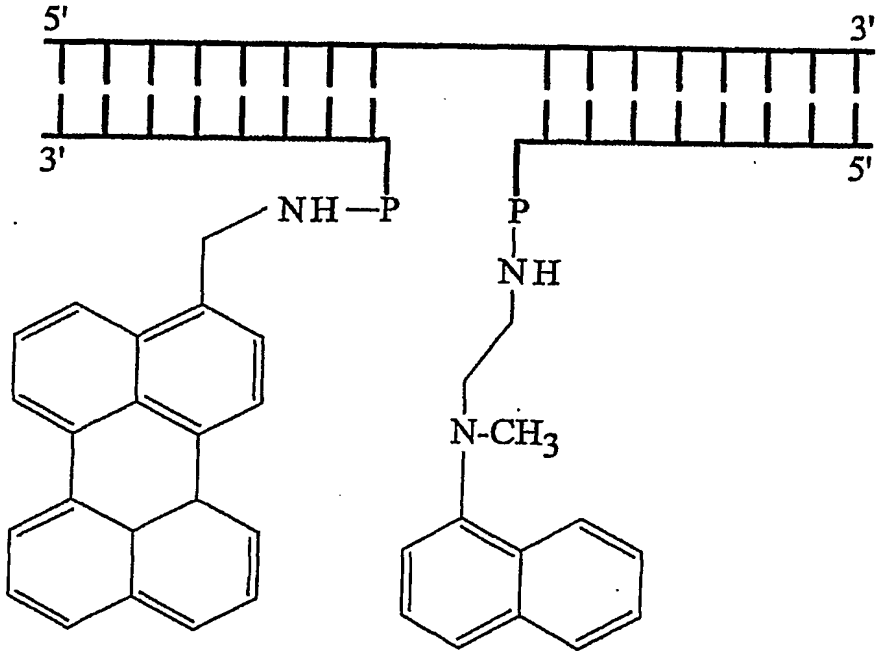
SP-20



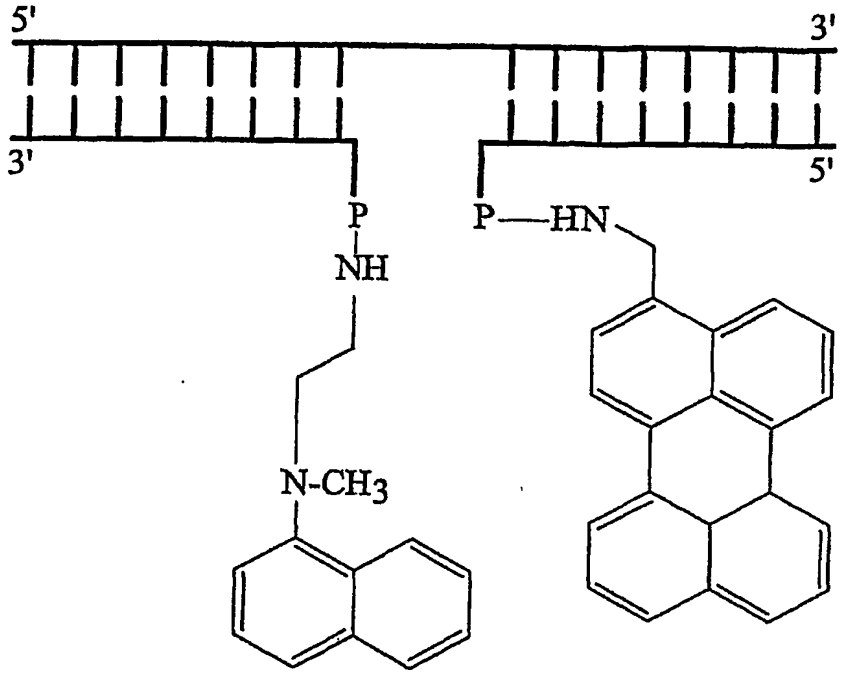
SP-21



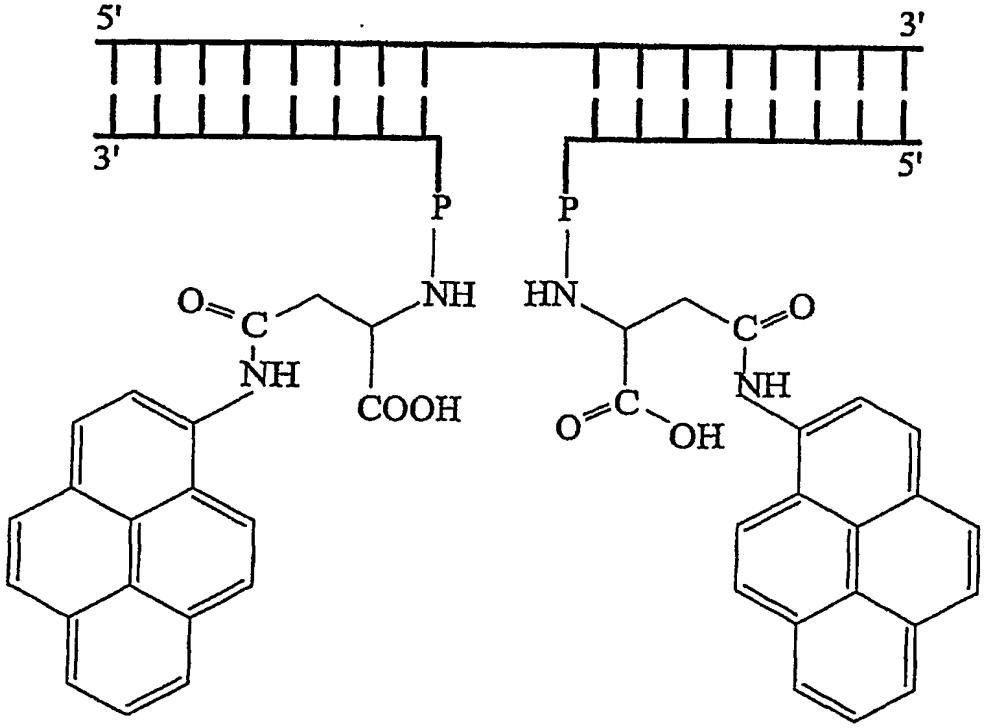
SP-23



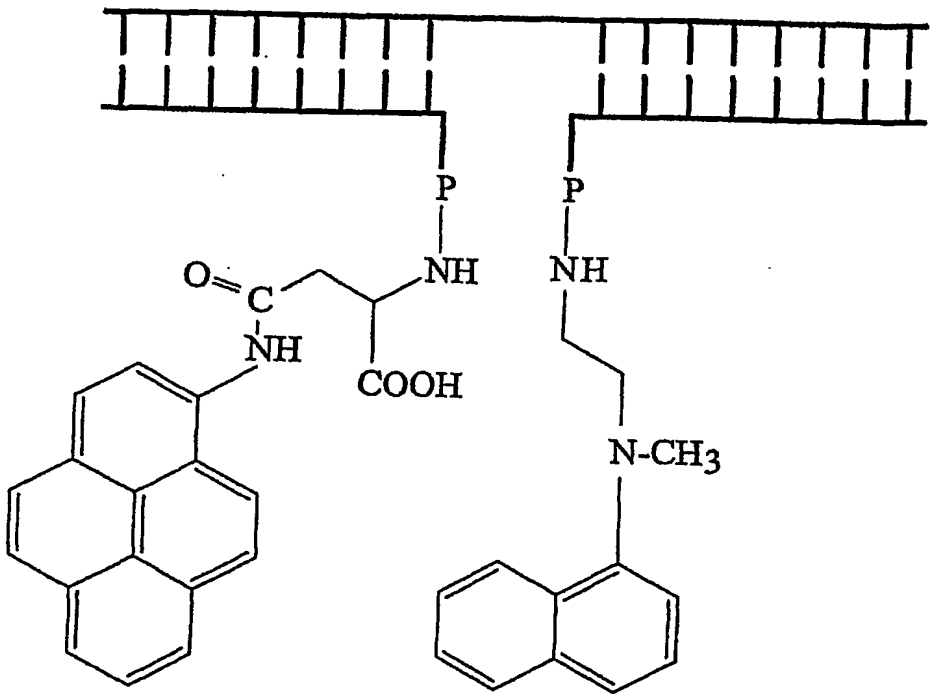
SP-24



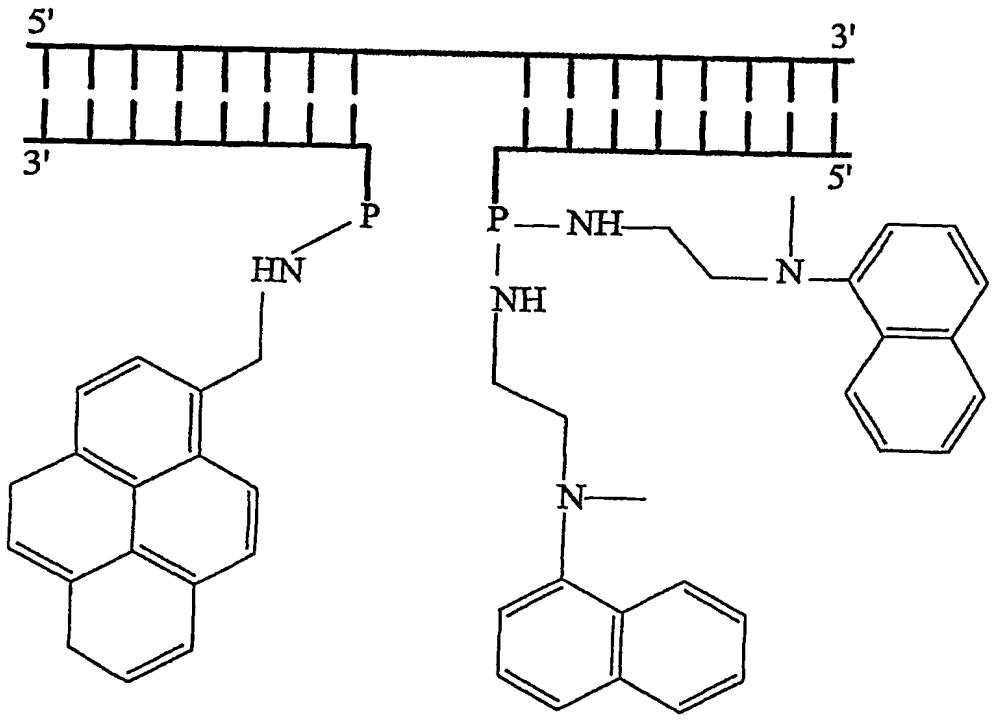
SP-25



SP-26



SP-34



SP-38

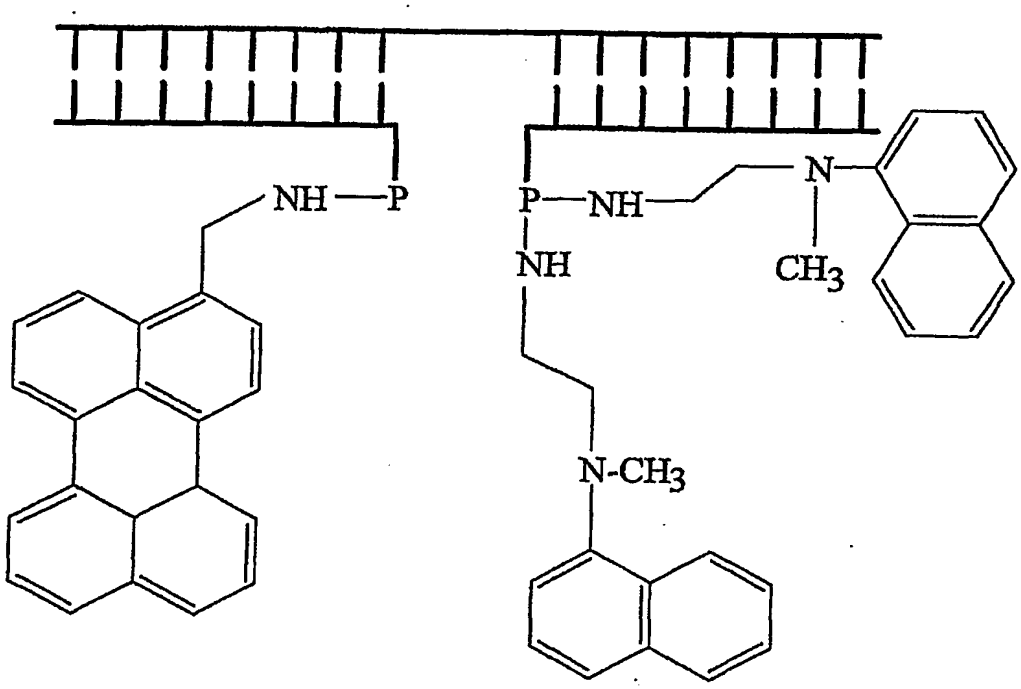
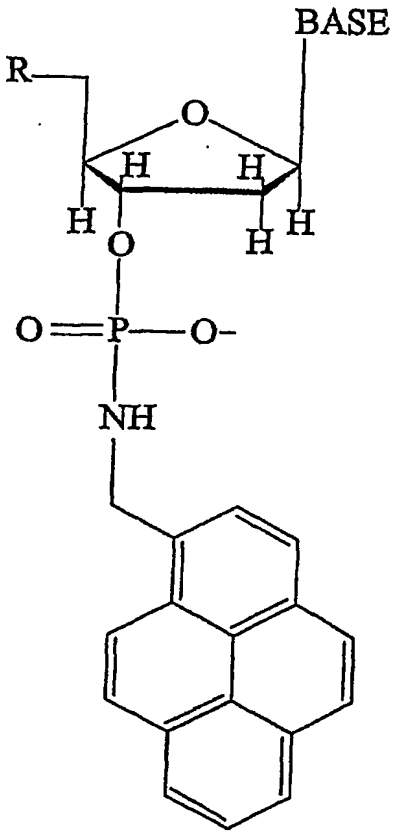
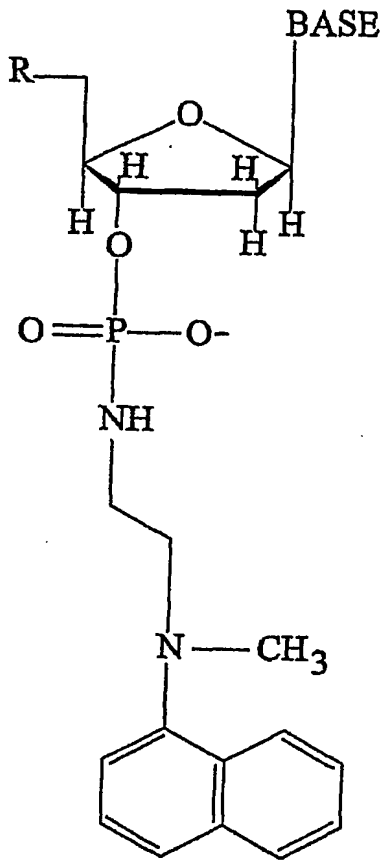


FIGURE 1a

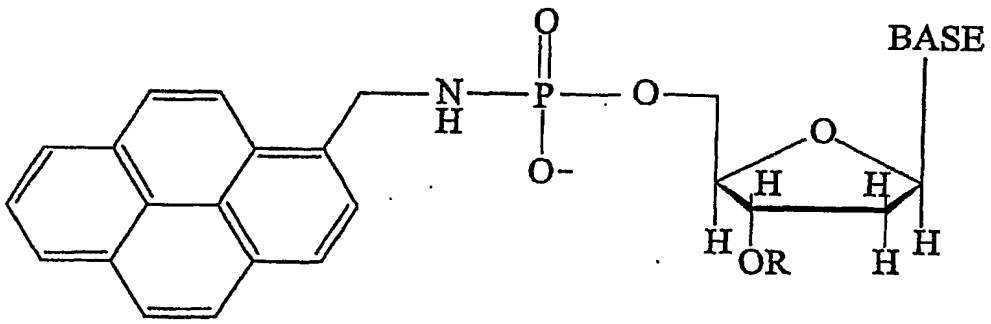


3' Attachment of pyrene

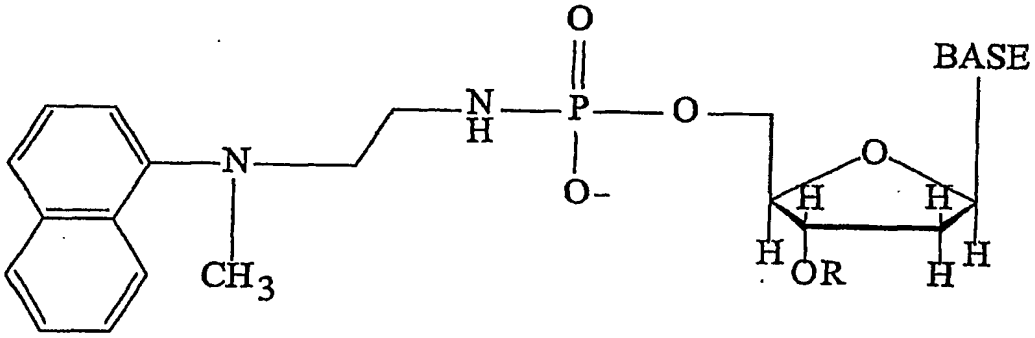


3' Attachment of naphthalene derivative

FIGURE 1a

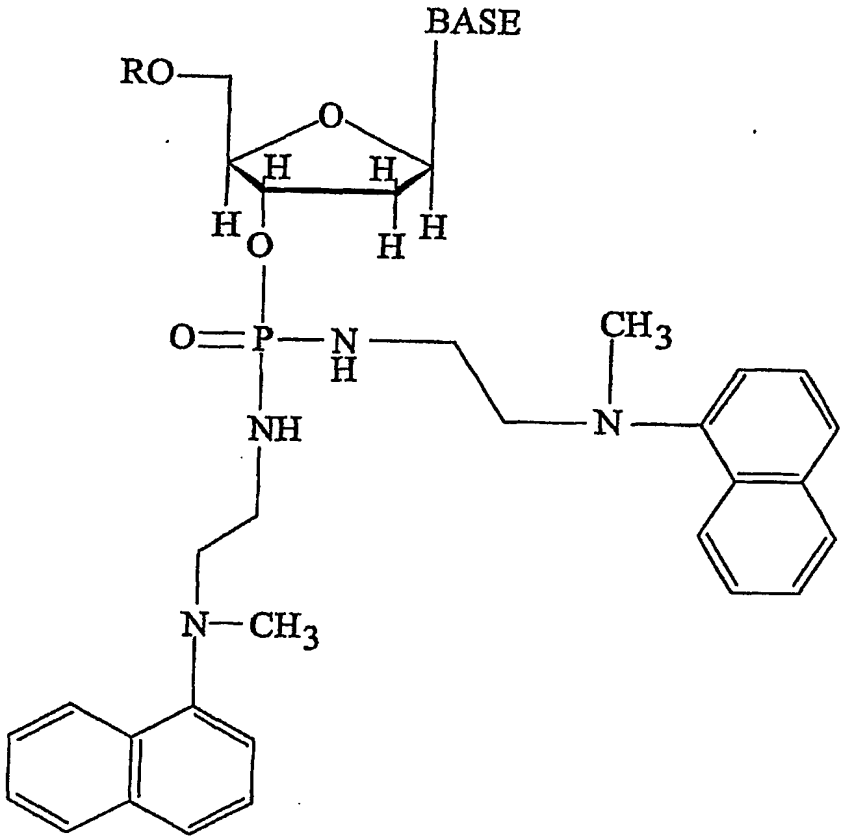


5' Attachment of pyrene



5' Attachment of naphthalene derivative

FIGURE 1a



3' Attachment of bio-naphthalene derivative.

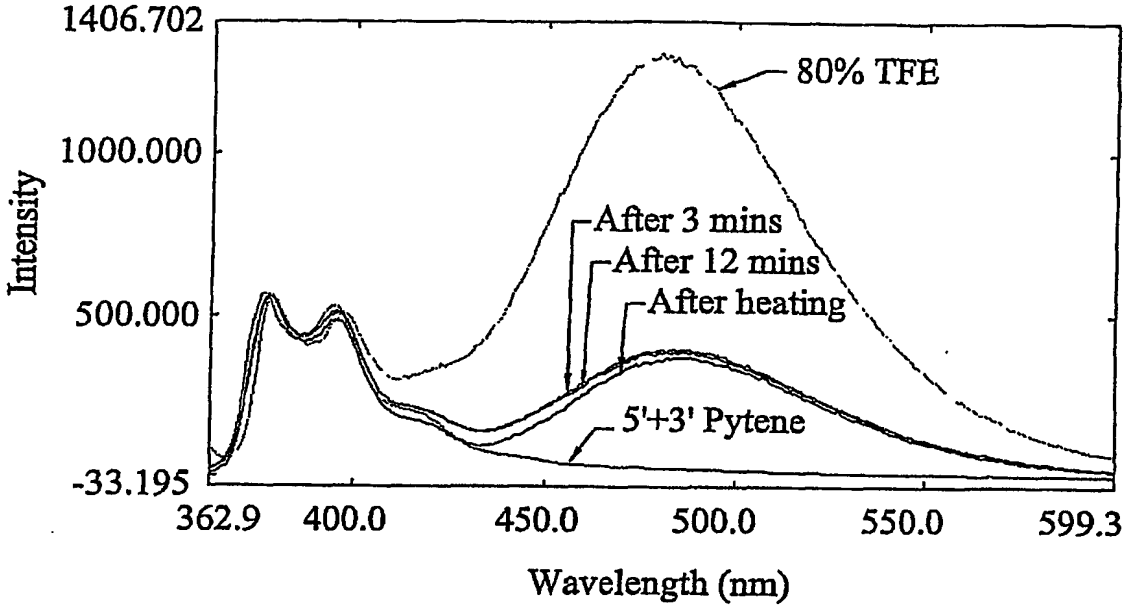

1406.702
1000.000
500.000
-33.195
Intensity
80% TFE
After 3 mins
After 12 mins
After heating
5'+3' Pytene
362.9
400.0
450.0
500.0
550.0
599.3
Wavelength (nm)

FIG 2

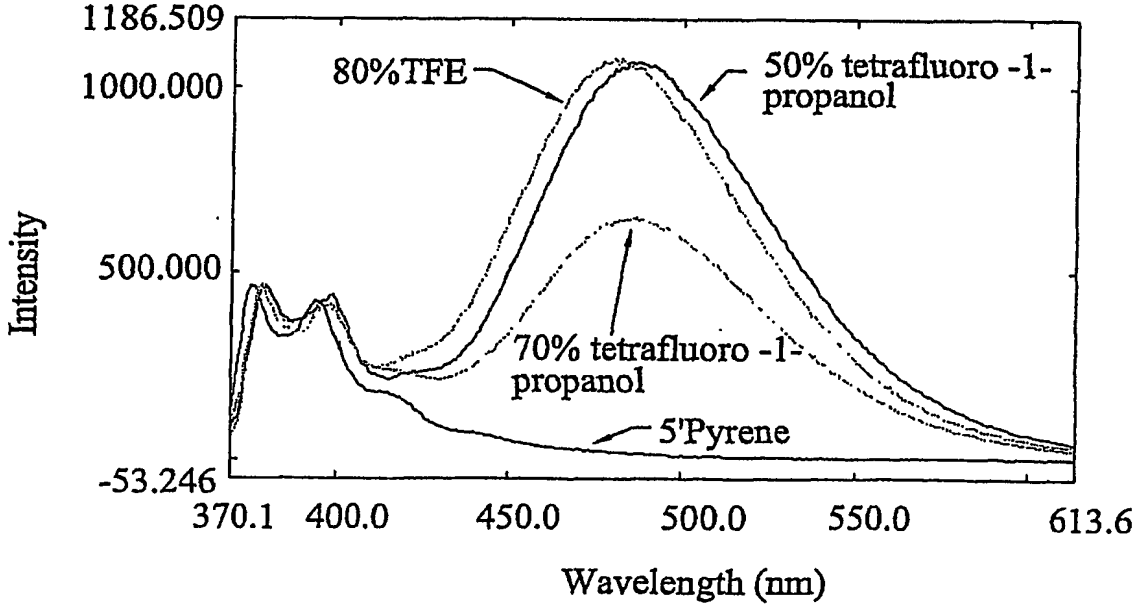

1186.509
1000.000
500.000
-53.246
Intensity
80%TFE
50% tetrafluoro -1-propanol
70% tetrafluoro -1-propanol
5'Pyrene
370.1
400.0
450.0
500.0
550.0
613.6
Wavelength (nm)

FIG 3

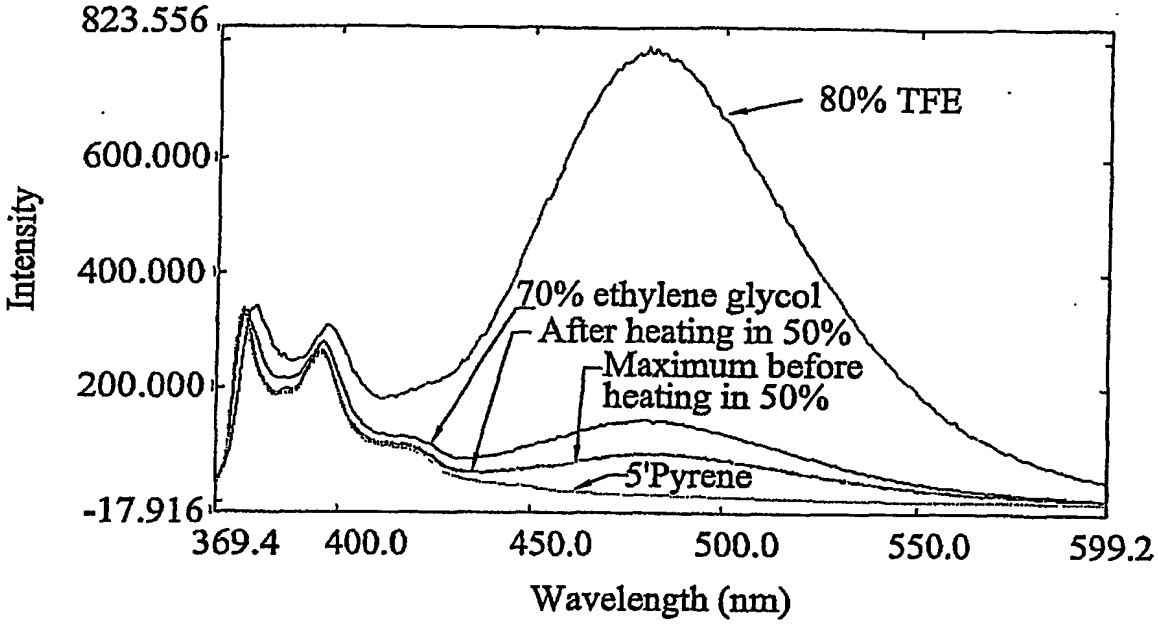

823.556
600.000
400.000
200.000
-17.916
Intensity
80% TFE
70% ethylene glycol
After heating in 50%
Maximum before
heating in 50%
5'Pyrene
369.4
400.0
450.0
500.0
550.0
599.2
Wavelength (nm)

FIG 4

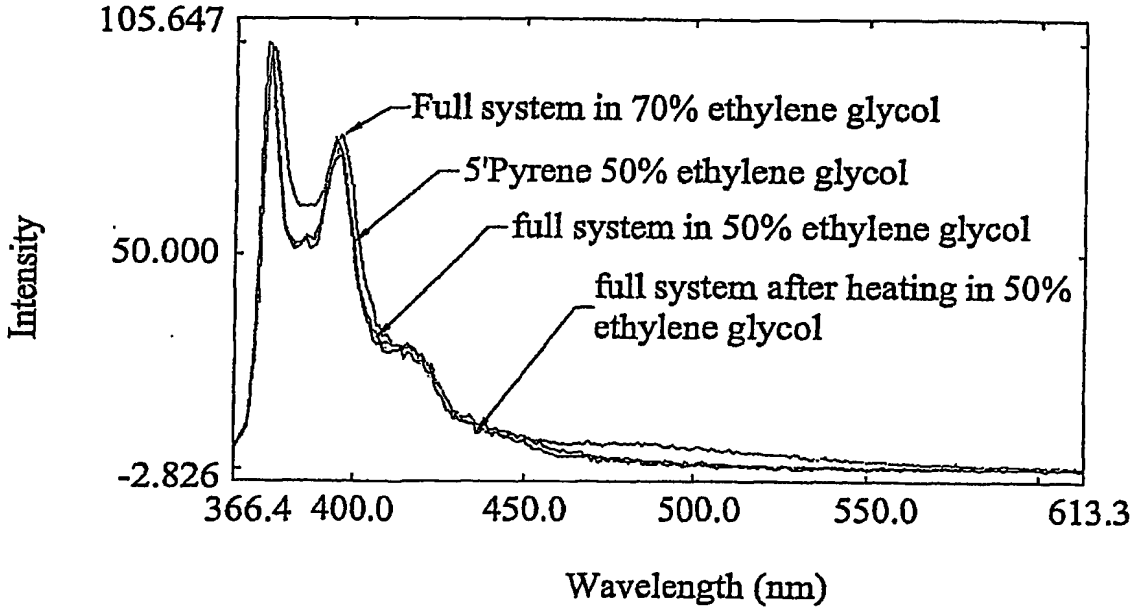

105.647
50.000
-2.826
Intensity
Full system in 70% ethylene glycol
5'Pyrene 50% ethylene glycol
full system in 50% ethylene glycol
full system after heating in 50%
ethylene glycol
366.4
400.0
450.0
500.0
550.0
613.3
Wavelength (nm)

FIG 5

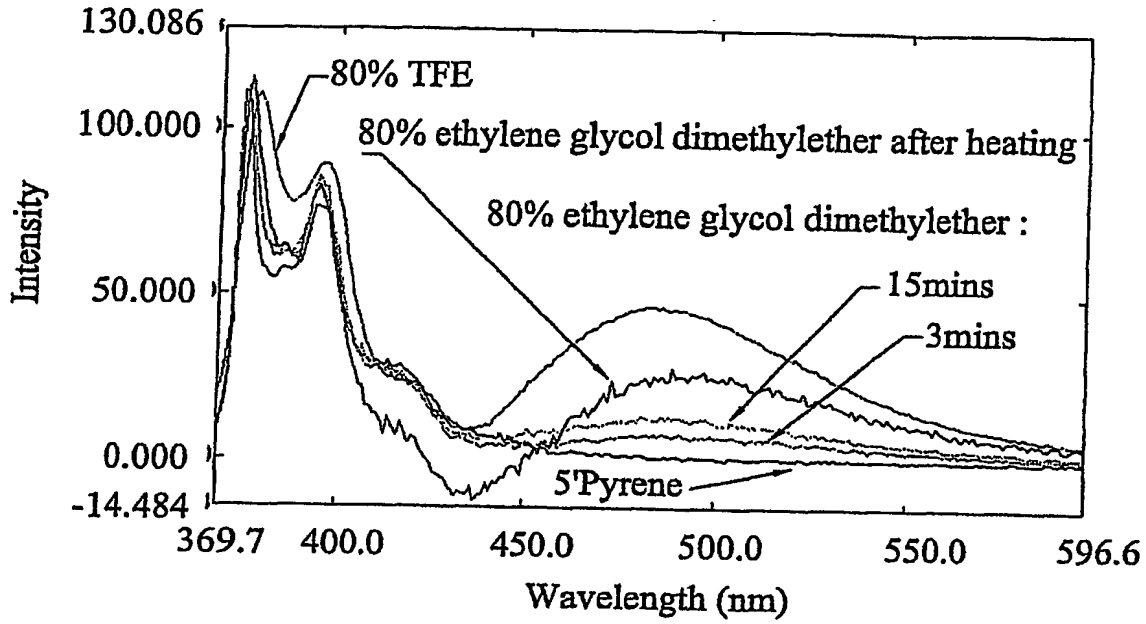

130.086
100.000
50.000
0.000
-14.484
Intensity
80% TFE
80% ethylene glycol dimethylether after heating
80% ethylene glycol dimethylether :
15mins
3mins
5'Pyrene
369.7
400.0
450.0
500.0
550.0
596.6
Wavelength (nm)

FIG 6

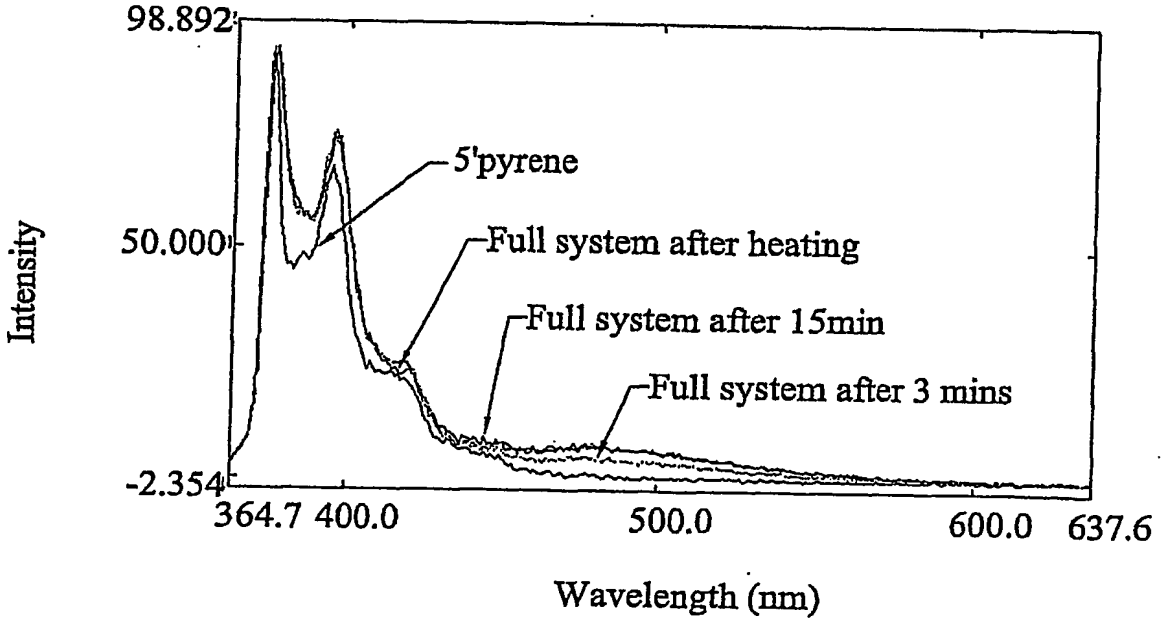

98.892
50.000
-2.354
Intensity
5'pyrene
Full system after heating
Full system after 15min
Full system after 3 mins
364.7
400.0
500.0
600.0
637.6
Wavelength (nm)

FIG 7

Emmission specta of SP-17

(EXT at 350nm)
80% TFE in Tris buffer,pH 8.5
2.5 uM duplex,spectra are scaled

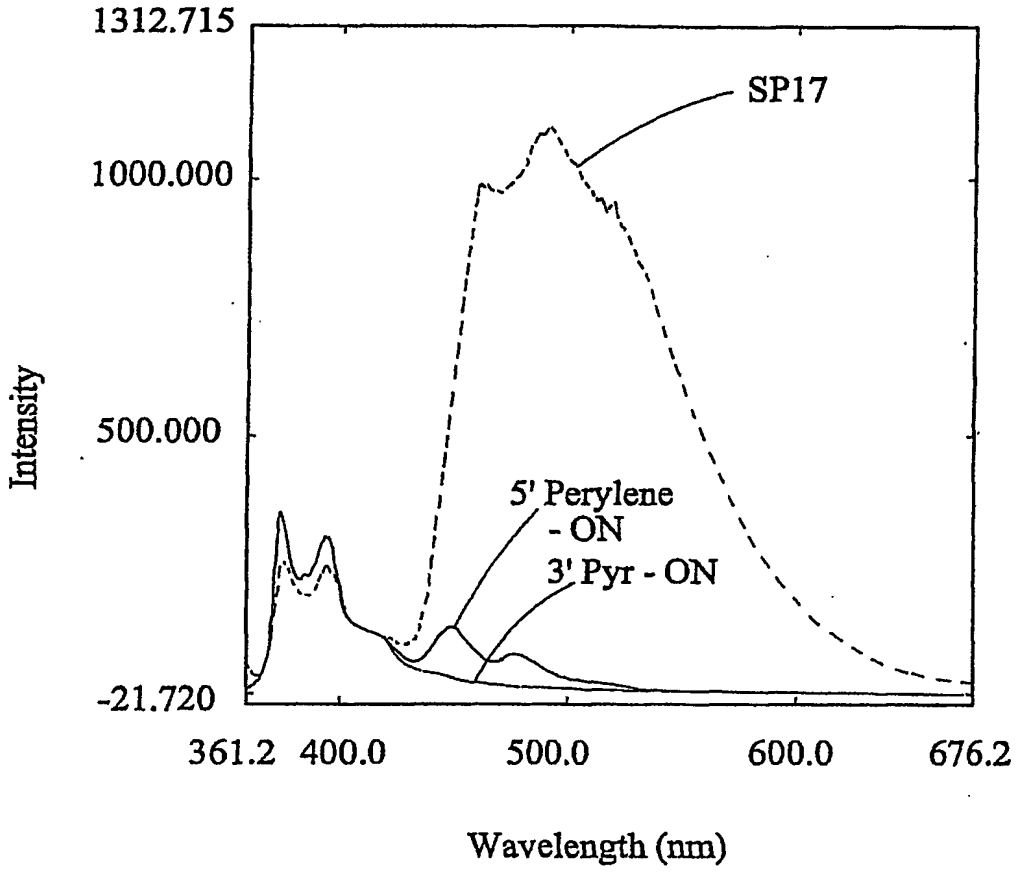


FIG 8

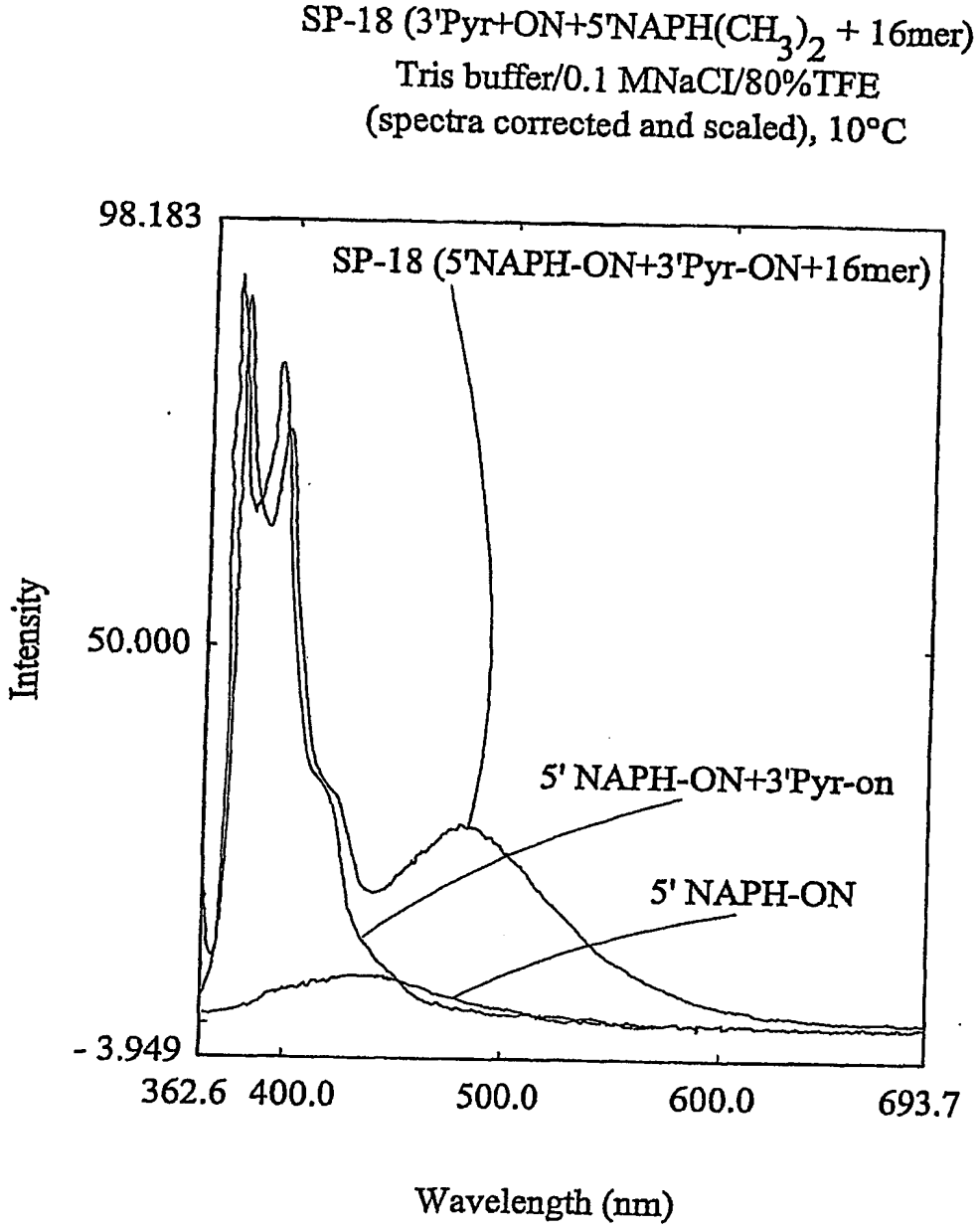

SP-18 (3'Pyr+ON+5'NAPH(CH3)2 + 16mer)
Tris buffer/0.1 MNaCl/80%TFE
(spectra corrected and scaled), 10°C
98.183
SP-18 (5'NAPH-ON+3'Pyr-ON+16mer)
Intensity
50.000
5' NAPH-ON+3'Pyr-on
5' NAPH-ON
- 3.949
362.6
400.0
500.0
600.0
693.7
Wavelength (nm)

FIG 9

SP-19 (5'Pyr-ON+3'NAPH-ON+16mer)
(in Tris buffer/0.1MNaCl/80%TFE
(spectra corrected and scaled)

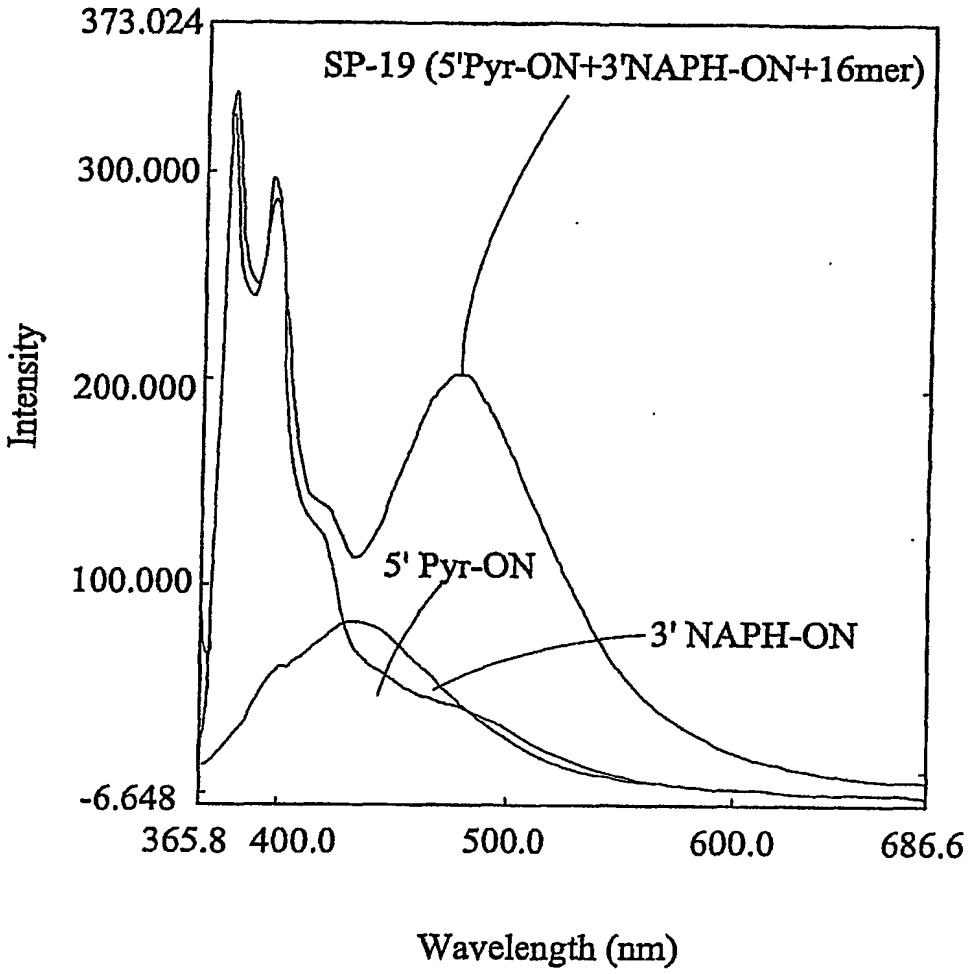


FIG 10

Melting temperature experiment for SP-19 in Tris buffer/THF system (10 mM Tris, pH 8.3, Na C1 based on 80% TFE/20% water solution).

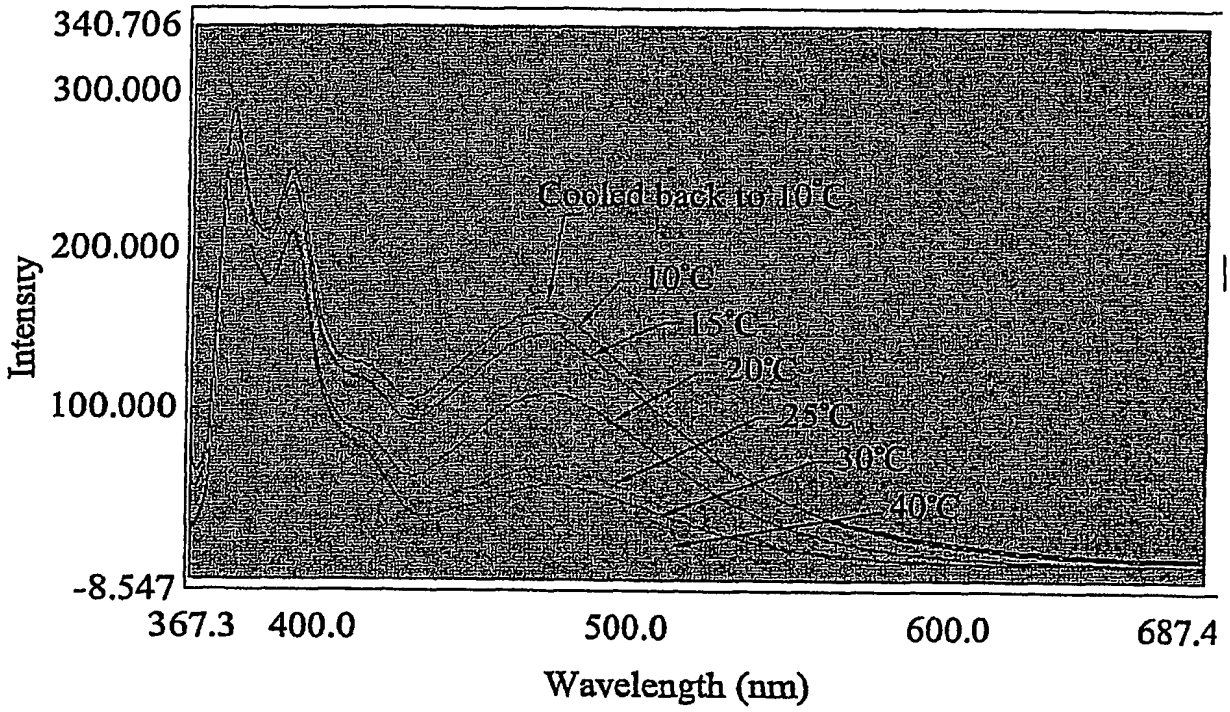


FIG 11

SP-19 systems and its components in Tris buffer/THF solution.
(10 mN Tris, pH8.3, 0.1M NaCl based on
80% TFE/20% water solution).

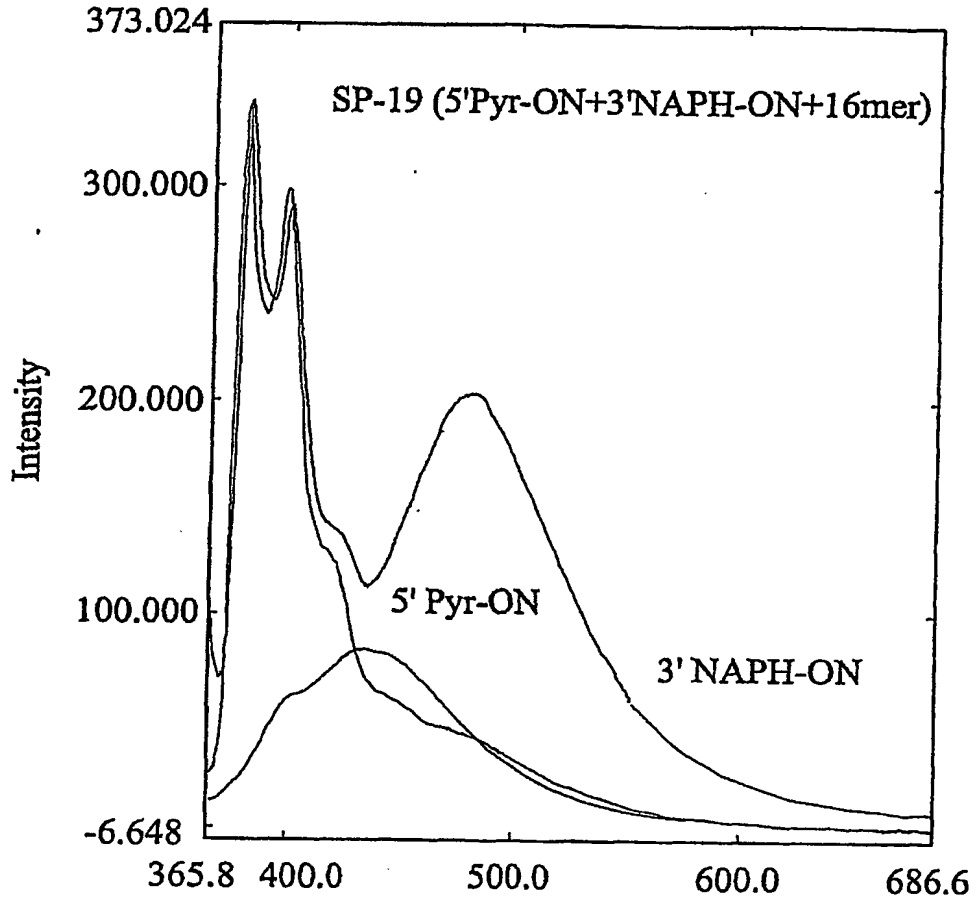


FIG 12 (A)

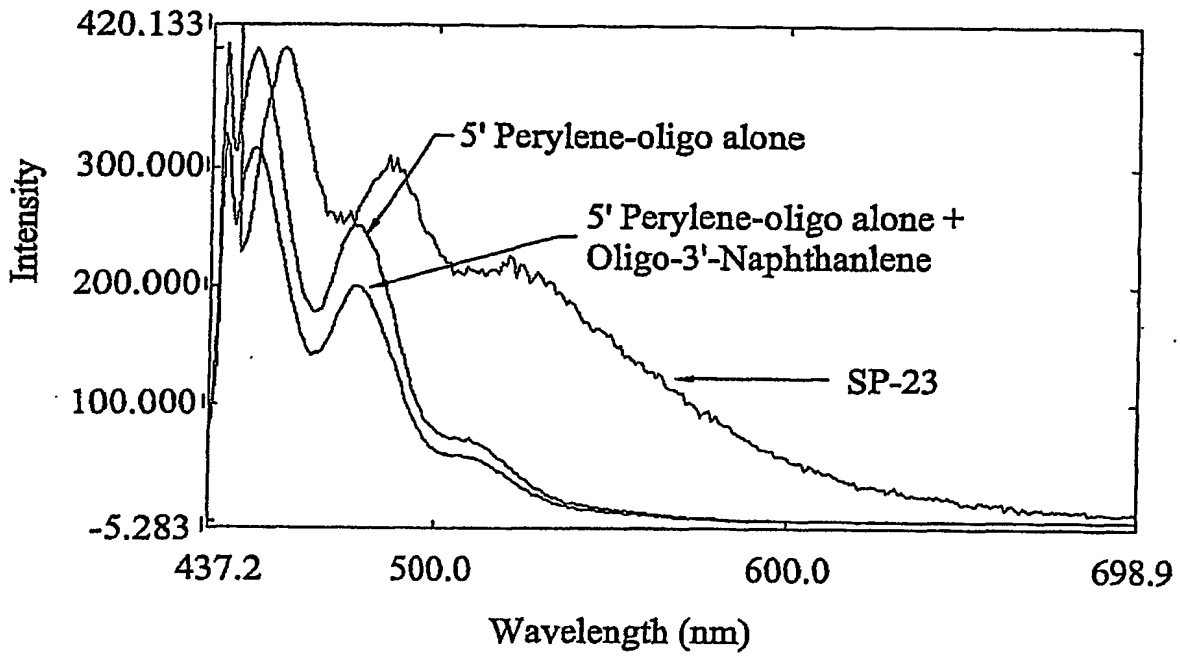

420.133
300.000
200.000
100.000
-5.283
Intensity
5' Perylene-oligo alone
5' Perylene-oligo alone +
Oligo-3'-Naphthanlene
SP-23
437.2
500.0
600.0
698.9
Wavelength (nm)

FIG 12B

Comparison of excited-state complex emmission within DNA split-probes possessing different donor partner

10 C, 10mM Tris,pH 8.3,0.1MNaCl/80% TFE.
Spectra are scaled using monomer band at 380nm as a reference

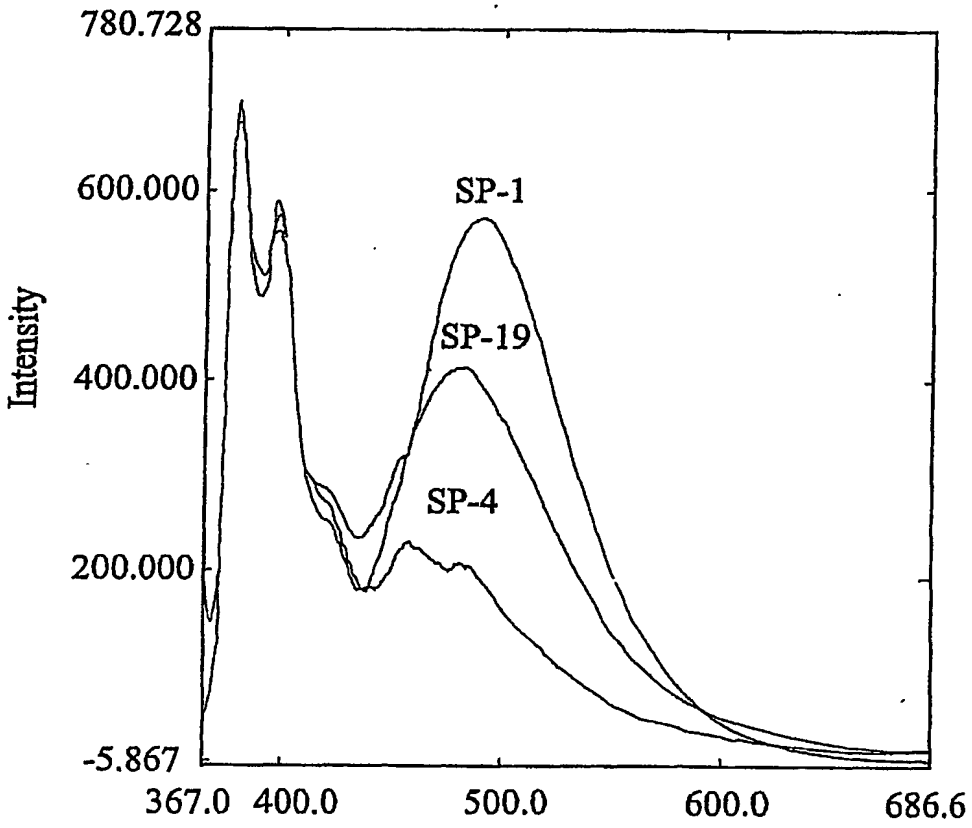


FIG 13

Emission spectra of SP-18 and SP-20

SP-18 possesses N-methylaminonaphthalene,
SP-20 possesses N,N-dimethylaminonaphthalene

(10mM Tris, pH 8.3, 0.1M NaCl/80%TFE)

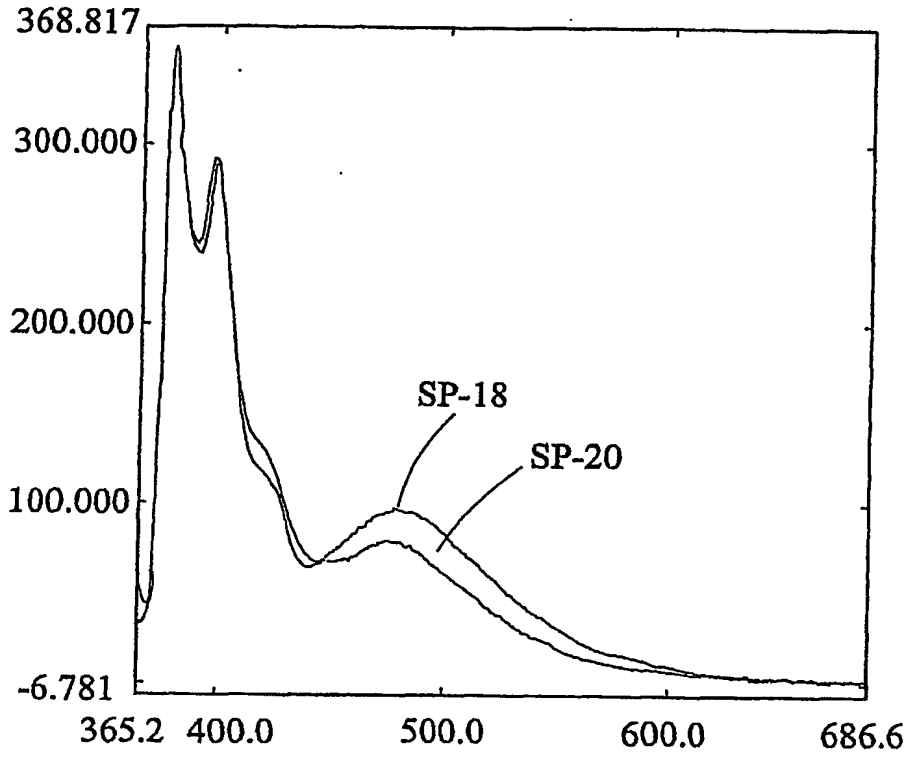


FIG 14

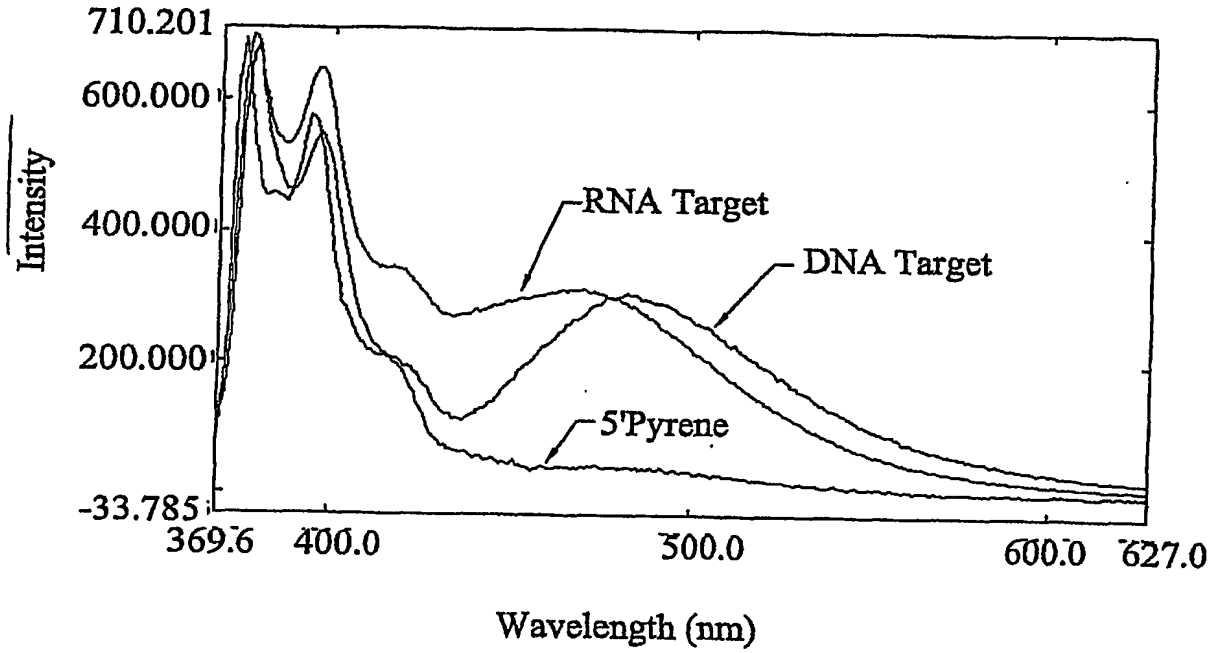


FIG 15A

Comparison of emission spectra of the RNA-BASED SP-19 system with the DNA-Based SP-19 system in 80% TFE? Tris (pH 8.5) at 10°C. Excitation wavelenght 350 nm; slitwidth 5 nm; spectra are scaled to monomer emissions.

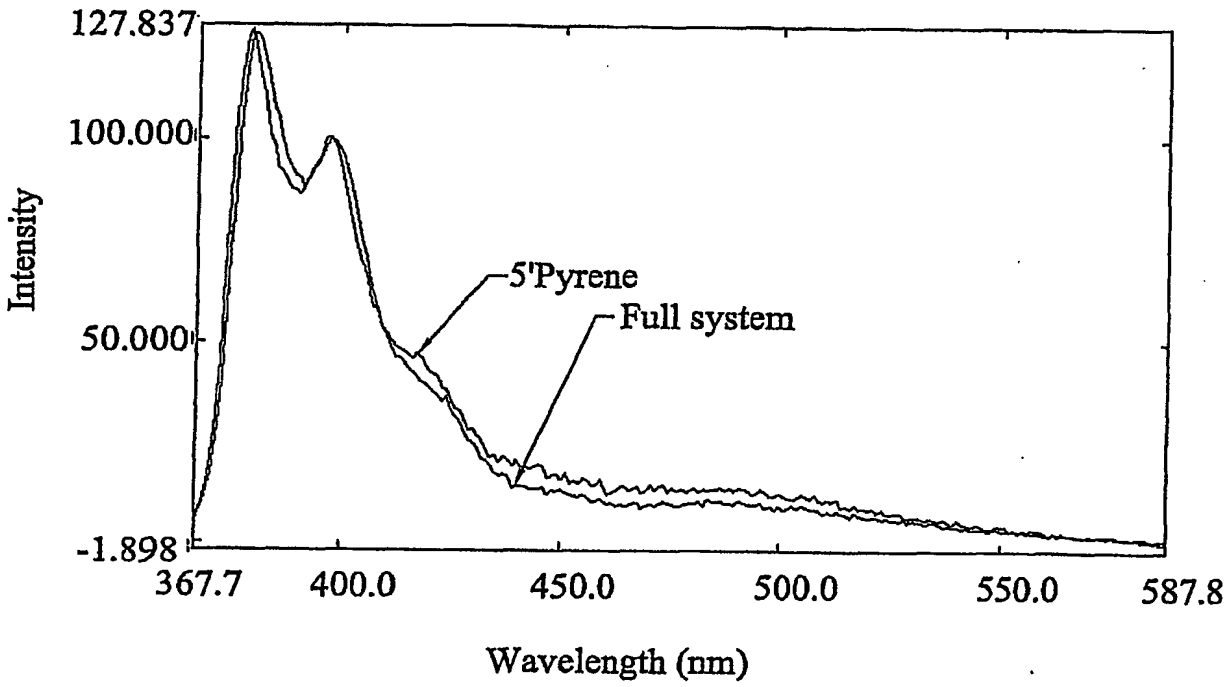


FIG 15B

Emissions spectra of 5-pyrene-bearing oligo (ON1-5'pyrene) and the full RNA-BASED SP-19 system in Tris buffer at 10°C showing the small background exciplex fluorescence. Excitation wavelenght 350 nm; slidwith 5 nm; spectra are scaled to monomer emission.

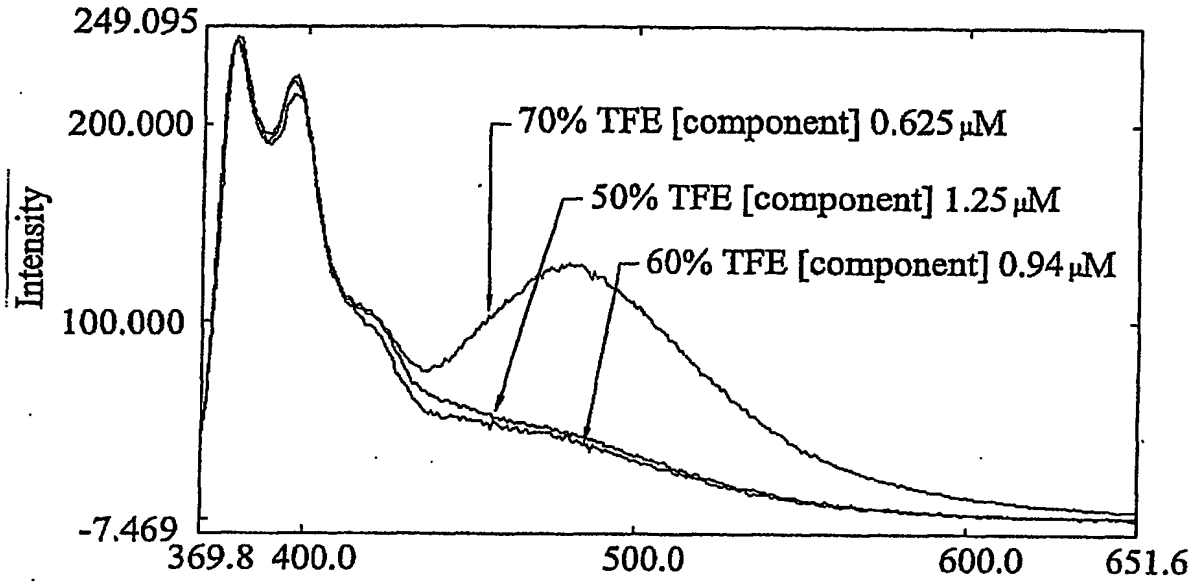


FIG 15C

Emission spectra of RNA-BASED SP-19 in Tris buffer at various TFE concentrations. All spectra were recorded at 10°C using an excitation wavelenght of 350 nm; slidwidth 5 nm; spectra are scaled to monomer emission.

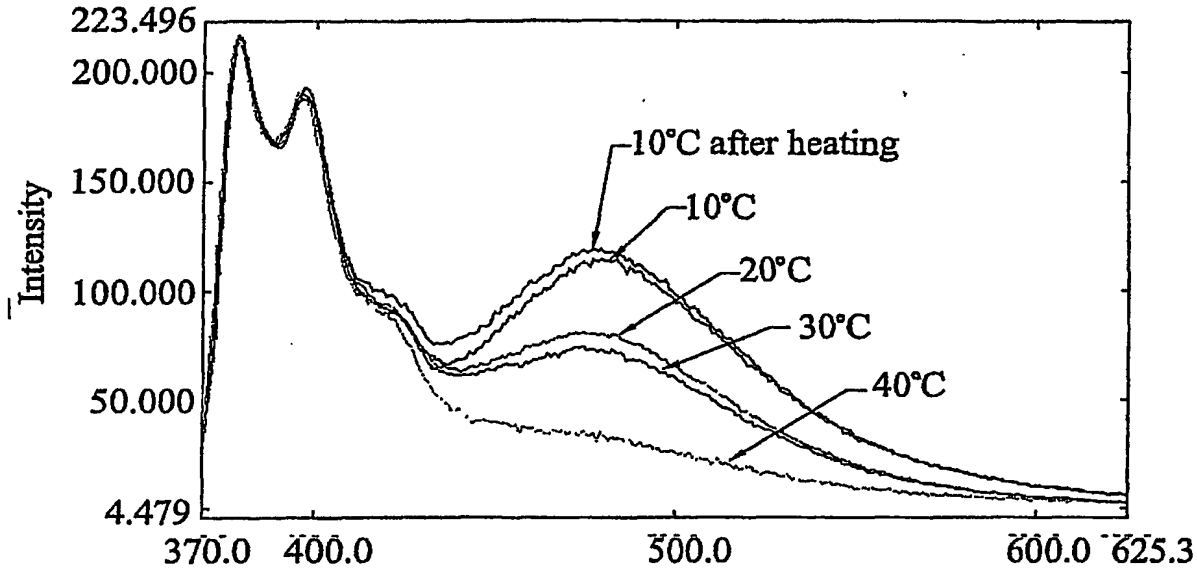


FIG 15D

Emission spectra of the RNA-BASED SP-19 system in 70% TFE/ Tris buffer (component concentration 0.625 μM) showing how exciplex decreases on heating to 40°C and reappears after cooling back to 10°C. Excitation wavelenght 350 nm; slidwith 5nm; spectra are scaled to monomer emission.

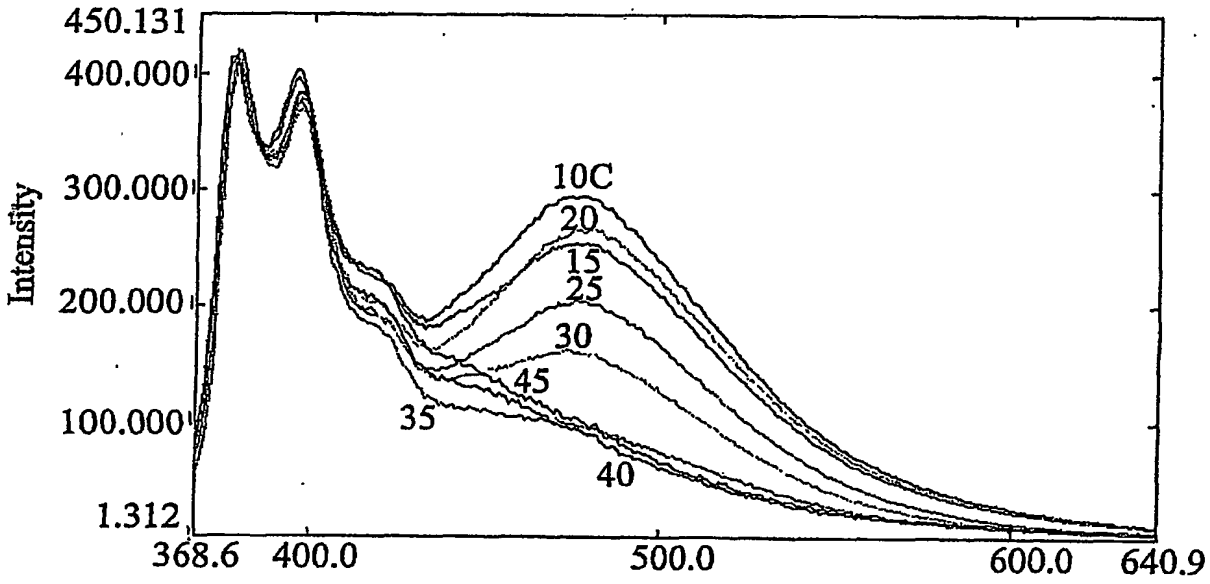


FIG 16

melting curve for RNA_SP19. Spectra are recorded in Tris buffer with 72% TFE and scaled to monomer emissions

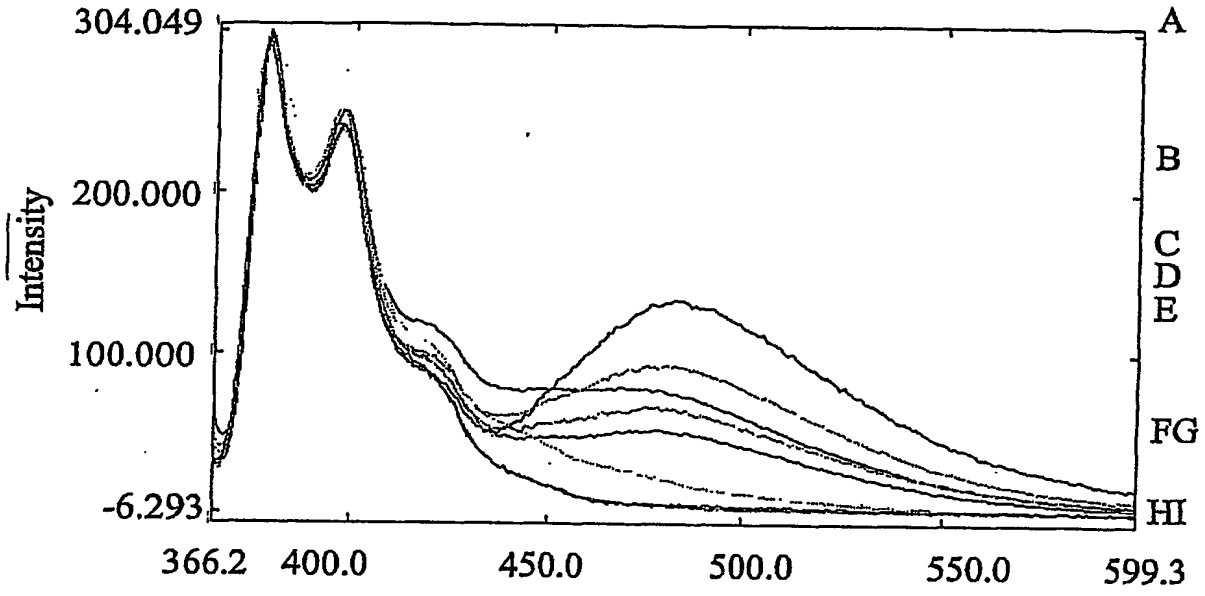


FIG 17

Comparison of Mismatch systems for SP19 exciplex system I before heating.
A=Parent, B=3'mismatch 3, C=3'mismatch 1, D=5'mismatch 3,
E=3'mismatch 2, F=5'mismatch 1, g=5'mismatch 2, H=3'double mismatch,
I=5'double mismatch

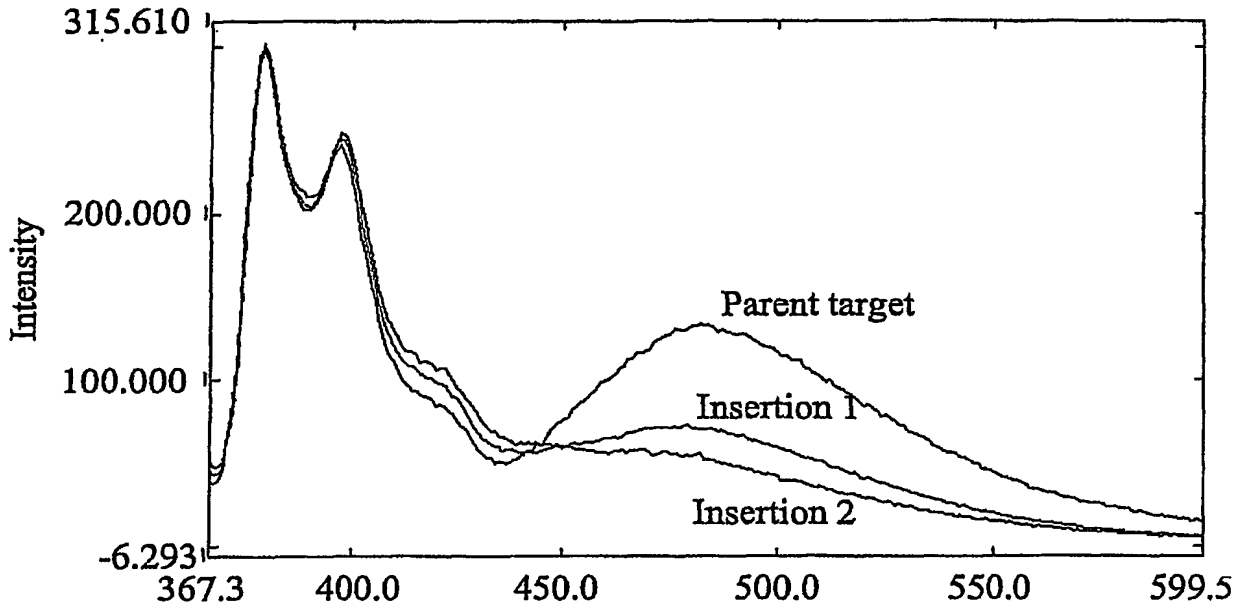


FIG 18

Comparison of Insertion for SP19 exciplex system I before heating.

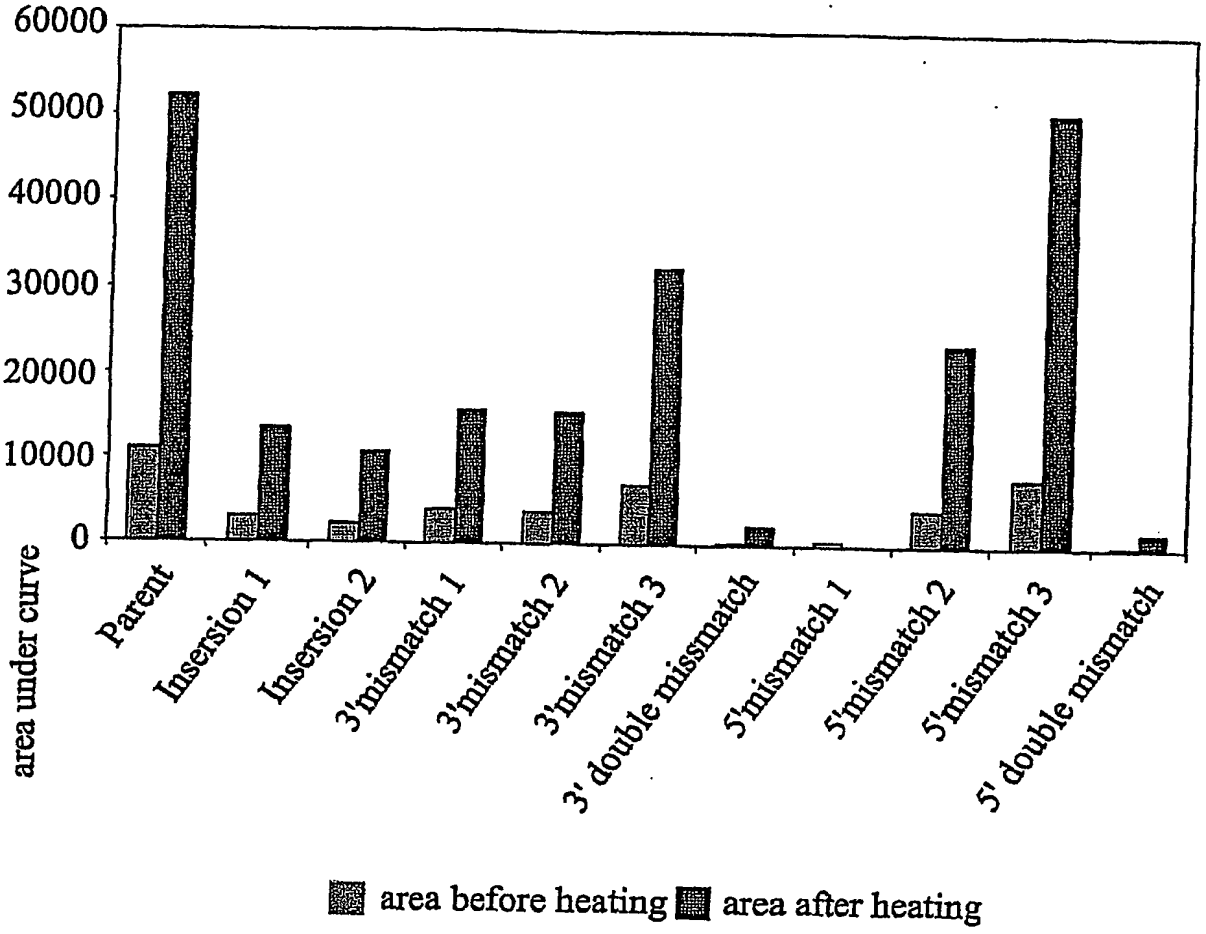

60000
50000
40000
30000
20000
10000
0
area under curve
Parent
Insersion 1
Insersion 2
3'mismatch 1
3'mismatch 2
3'mismatch 3
3' double missmatch
5'mismatch 1
5'mismatch 2
5'mismatch 3
5' double mismatch
area before heating
area after heating

FIG 19A

Area under the curve for the SP-19 system from 480-600 nm before and after heating to 40 C. Spectra were recorded in 80% TFE/Tris buffer (10mM Tris, 0.1 M NaCI,pH 8.5) at 10 C. Excitation wavelenght 350nm; slidwith 3nm. Spectra are buffer corrected.

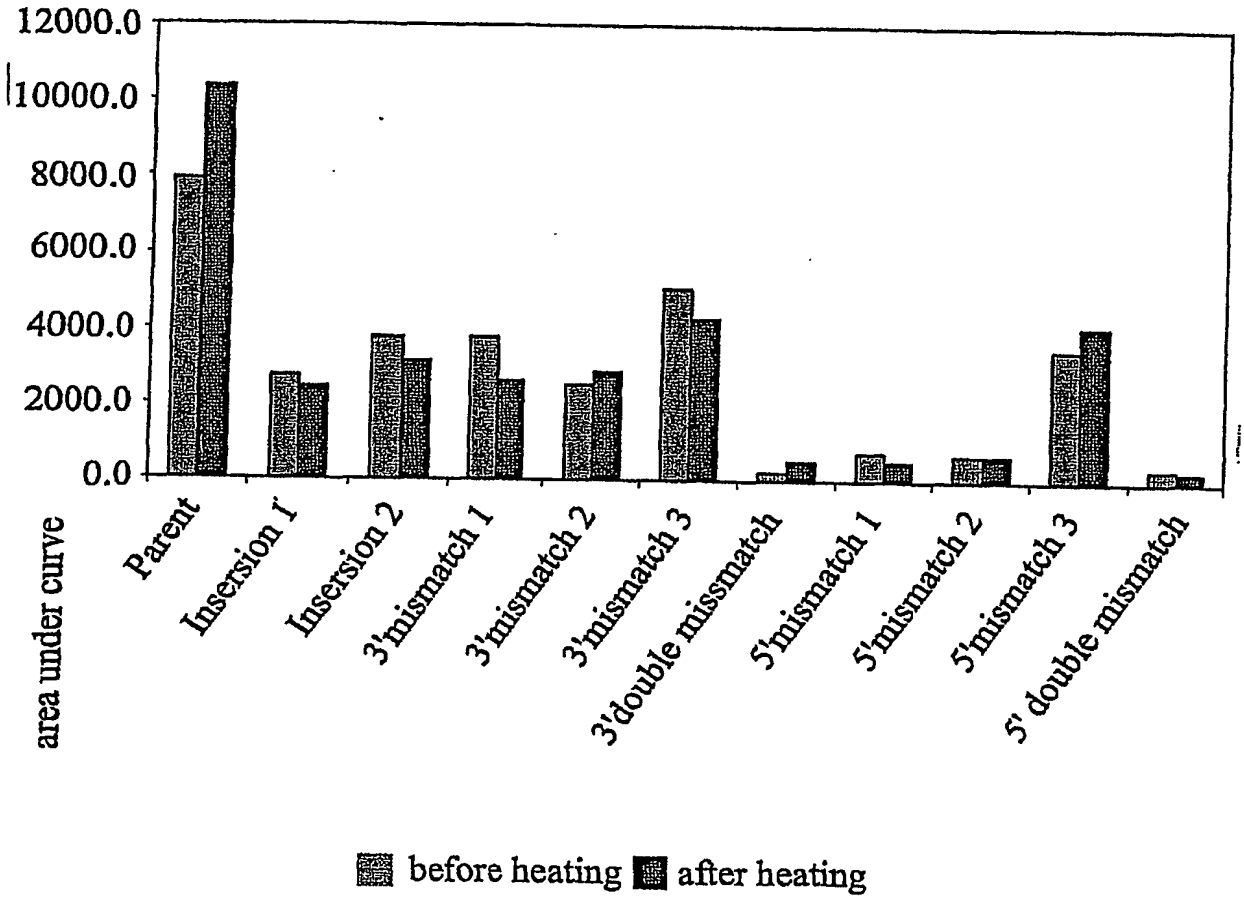


FIG 19B

SP-25 in Tris buffer (10 mN Tris,pH8.34
0.1 M NaCl) in presence and absence of TFE

(Ext at 347nm; all spectra are scaled except 5'Pyr)

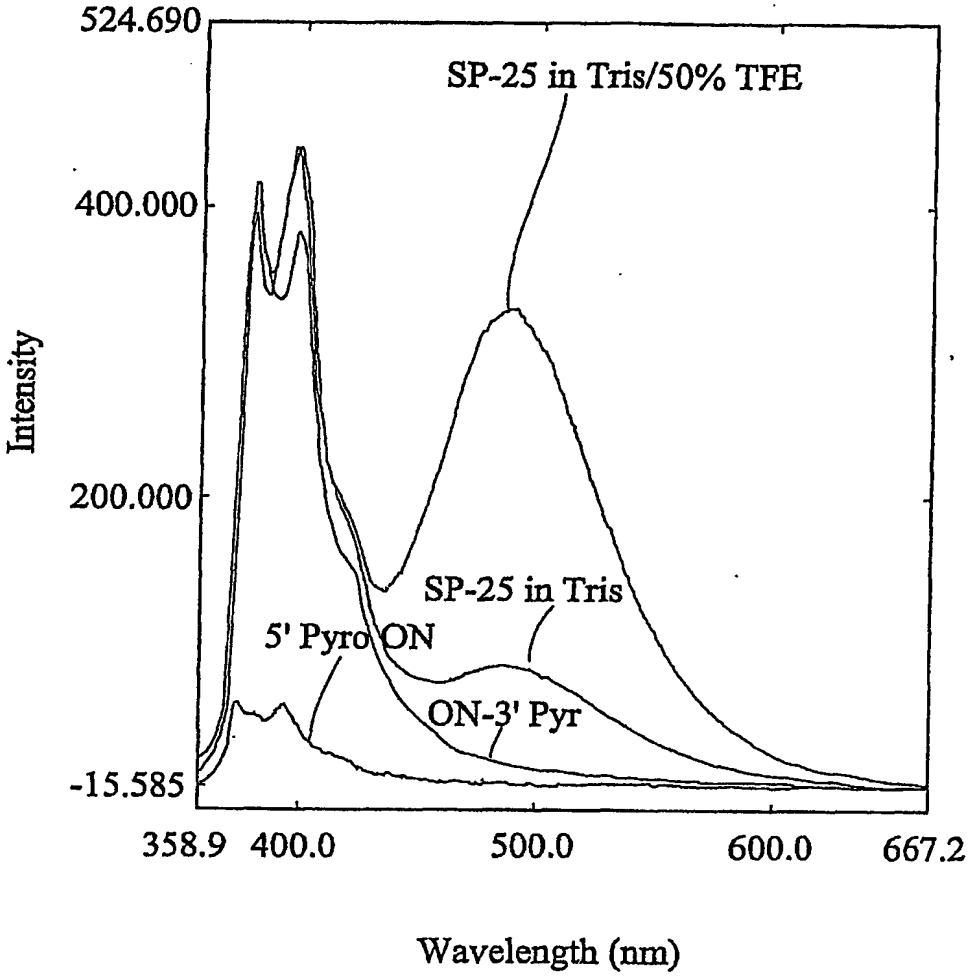


FIG 20.

SP-26 in Tris buffer/80% TFE

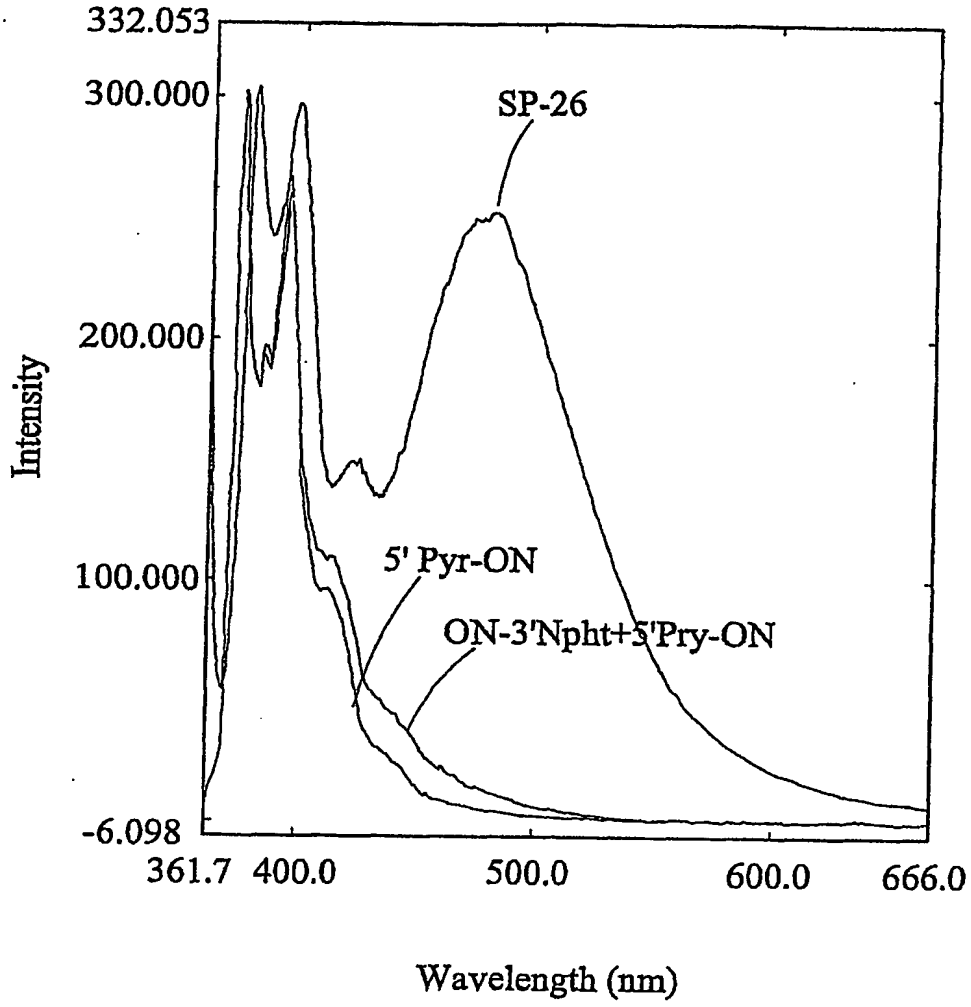


FIG 21

Emission spectra of ONI-5'Pyrene and ON2-3'Naphthalene in the presence of the target strand in Tris buffer at 10°C both in the presence 0f 0.15 M sulfolane,showing the shift in λ_{max} and decrease in intensity on addition of target.Excitation 350nm,slitwidth 5nm

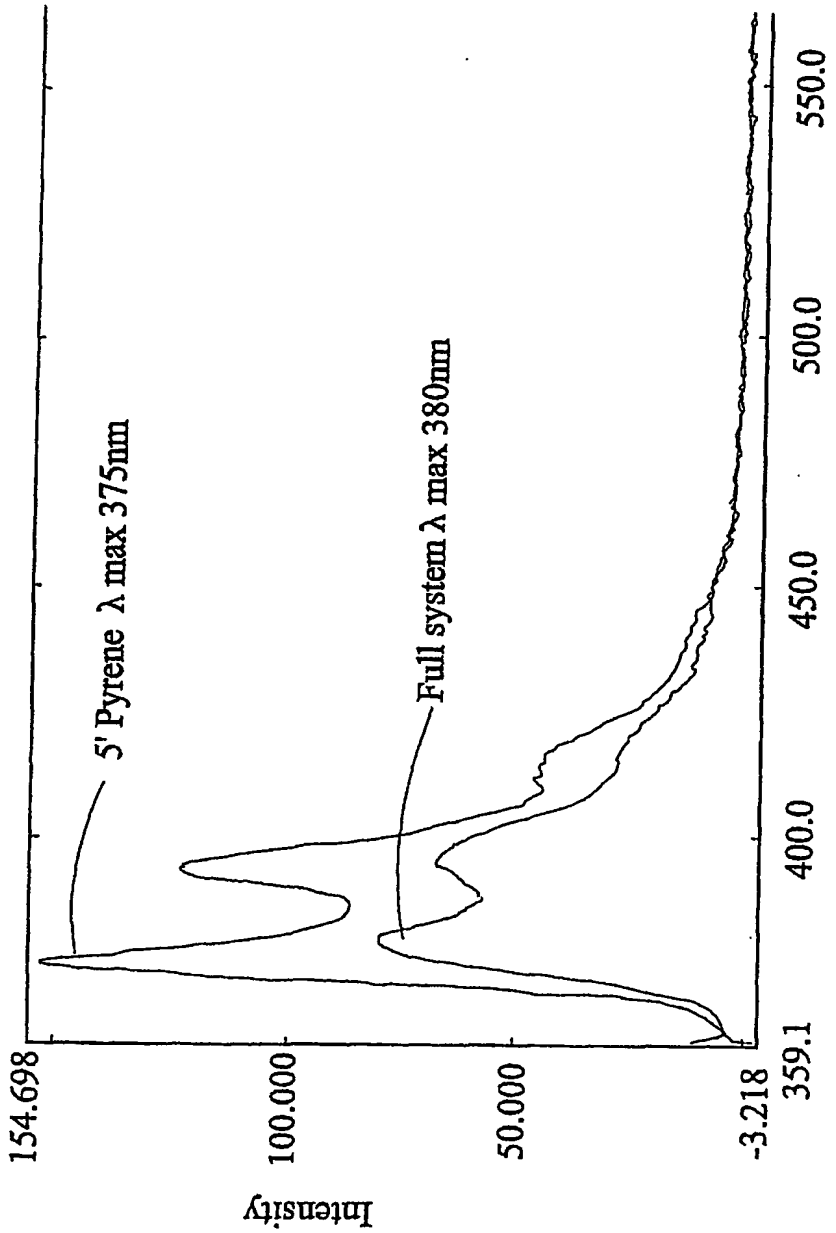


FIG 22

Emission Spectra of SP-19 in 80% TFE/ Tris buffer (10 mM Tris, 0.1 M NaCl, pH 8.5) at 10 C in the presence of 1 and 1.5 M betaine. Excitation wavelenght 350nm, slidwith 5nm. Spectra are scaled to monomer emission at 378nm to correct for dilution effects.

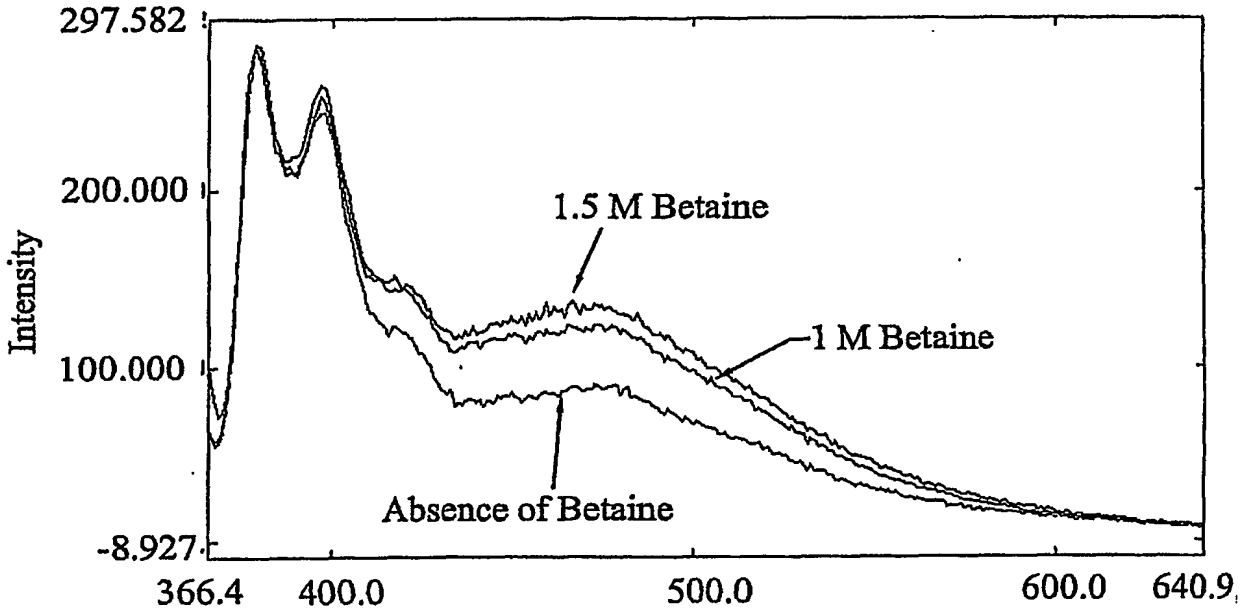


FIG 23

Emission spectra showing the effect of 0.15 M and 0.5 M sulfolane on the emission spectra of SP-19 in 80% TFE/ Tris buffer (10 mM Tris, 0.1 M NaCl, pH 8.5) at 10 C. Excitation wavelenght 350nm; slidwith 5 nm. Spectra are scaled to monomer emissions at 379 nm to correct for dilution effects.

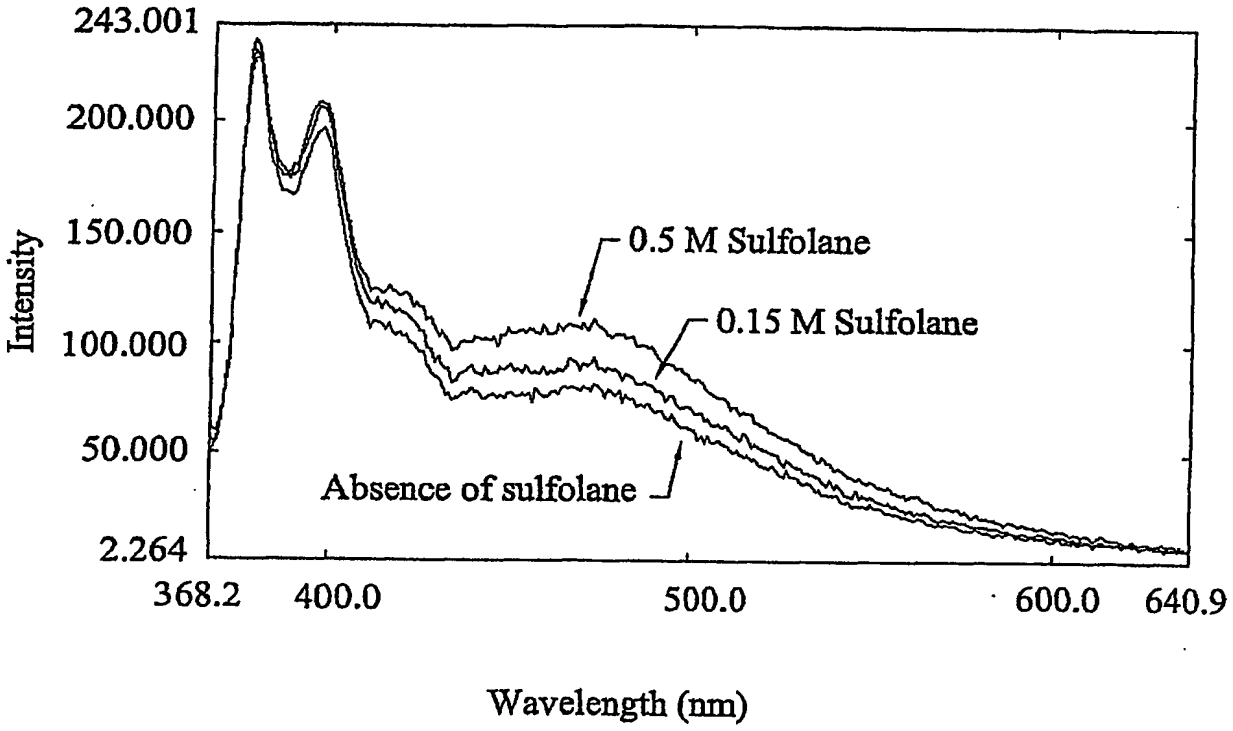


FIG 24

Emission spectra of the SP-19 system in 80% TFE/ Tris buffer (10 mM Tris, 0.1 M NaCI, pH 8.5) at 10 C showing the effect of addition of methylsulfone to give 0.6 and 1.1 M solutions. Excitation wavelenght 350 nm; slidwith 5 nm. Spectra are buffer-corrected and scaled to monomer emissions at 379 nm to correct for dilution effects

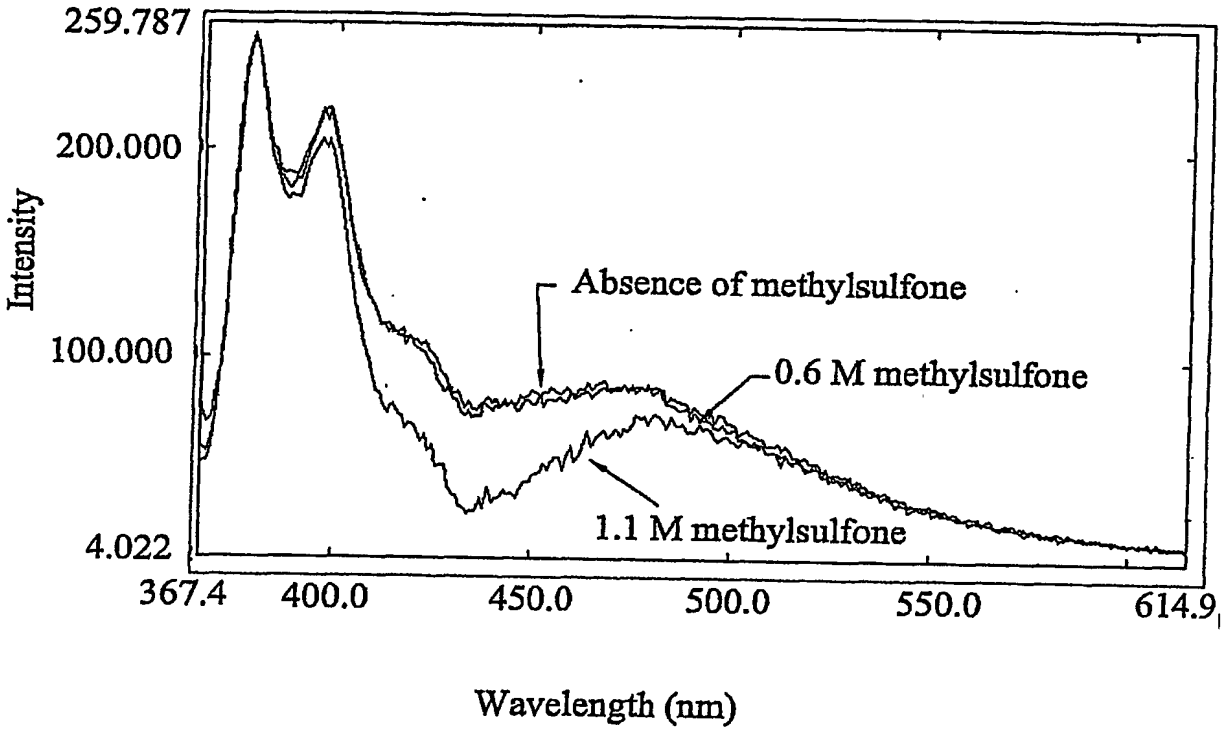


FIG 25

Emission spectra of SP-19 in 80% TFE/ Tris buffer (10 mM Tris, 0.1 M NaCI, pH 8.5) at 10 C showing the effect of the addition of DMSO (to final level of 10%, 1.41 M). Excitation wavelenght 350 nm, slidwith 5 nm. Spectra are buffer-corrected and scaled to monomer emission at 379 nm correct for dilution effects.

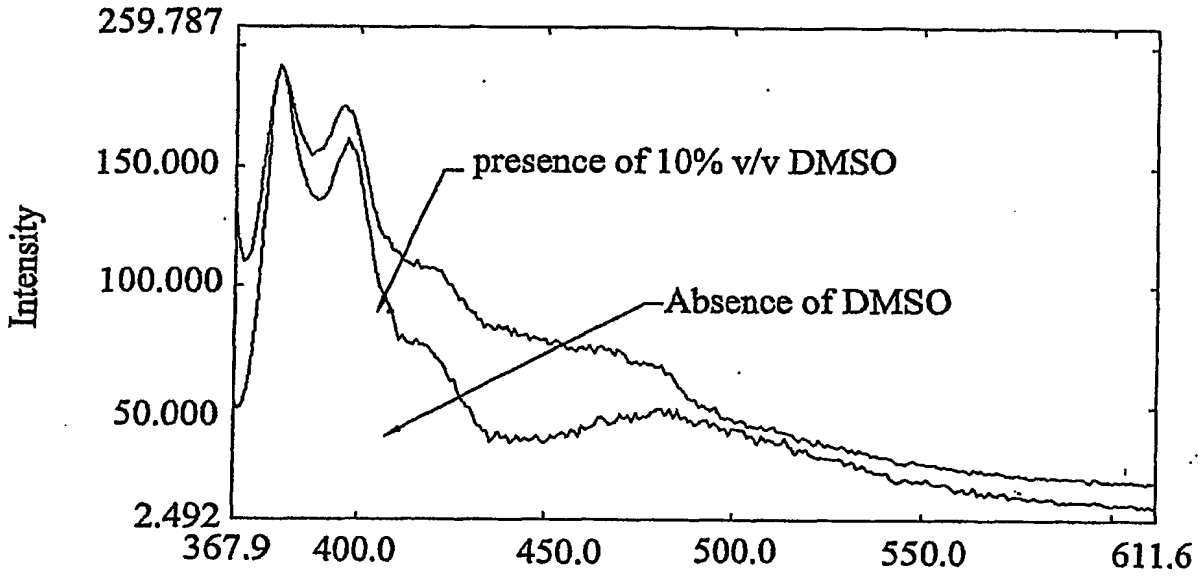


FIG 26

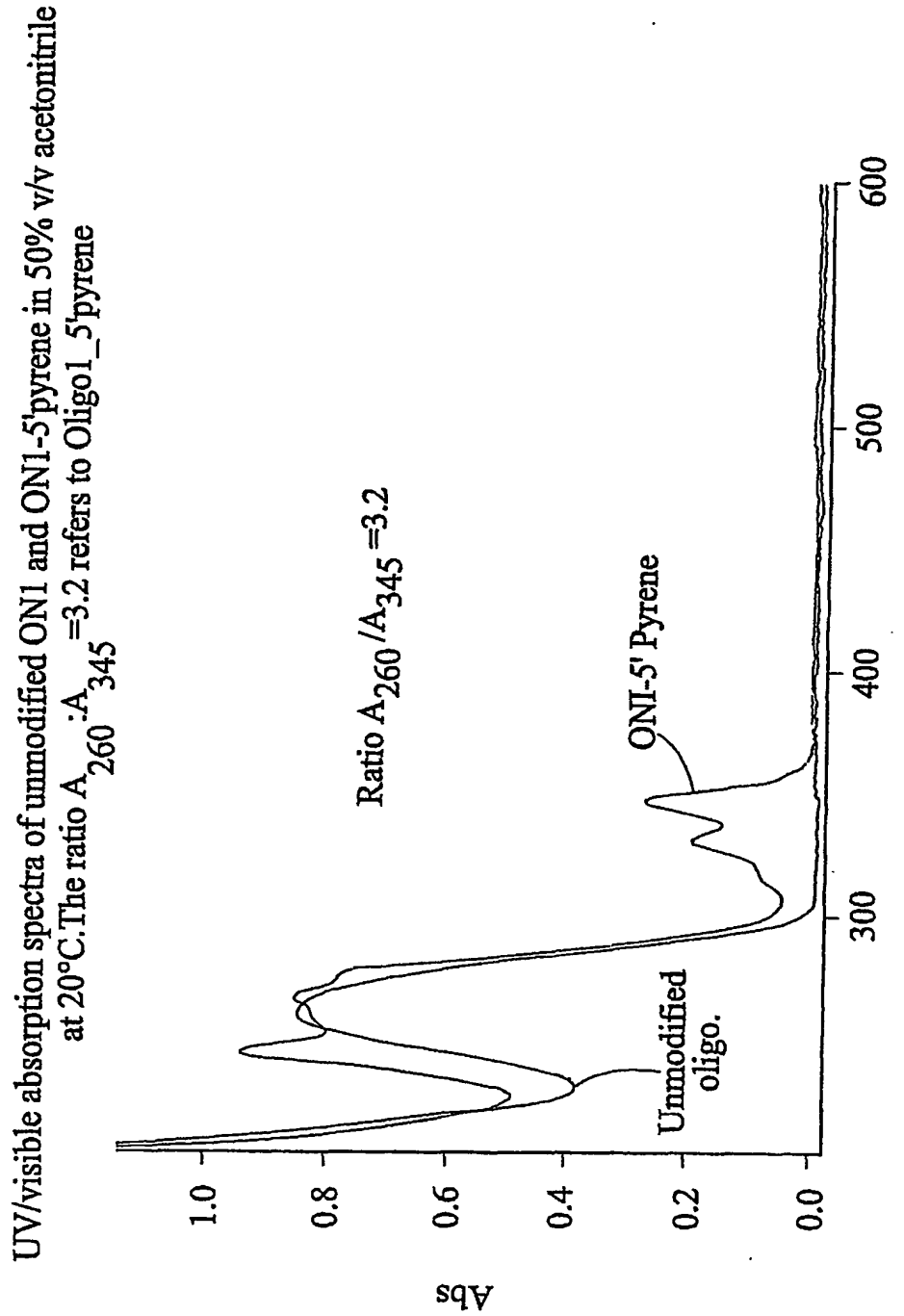

UV/visible absorption spectra of unmodified ON1 and ON1-5'pyrene in 50% v/v acetonitrile at 20°C.The ratio A_{260} :A_{345} =3.2 refers to Oligo1_5'pyrene
Ratio A_{260} /A_{345} =3.2
ONI-5' Pyrene
Unmodified oligo.
Abs
1.0
0.8
0.6
0.4
0.2
0.0
300
400
500
600
Wavelength (nm)

FIG 27

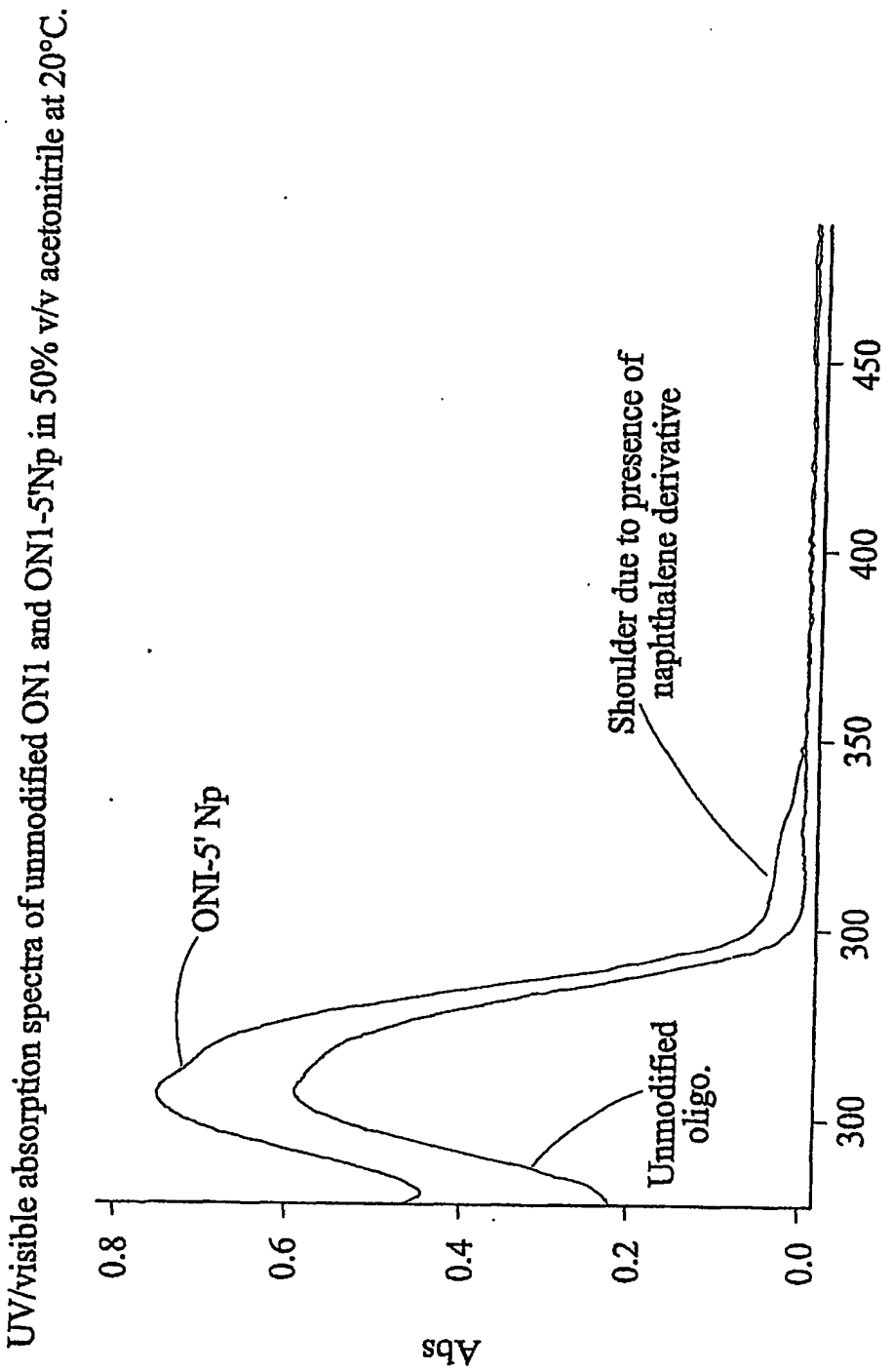

UV/visible absorption spectra of unmodified ON1 and ON1-5'Np in 50% v/v acetonitrile at 20°C.
ONI-5' Np
Shoulder due to presence of naphthalene derivative
Unmodified oligo.
Abs
0.0
0.2
0.4
0.6
0.8
300
300
350
400
450
Wavelength (nm)

FIG 28

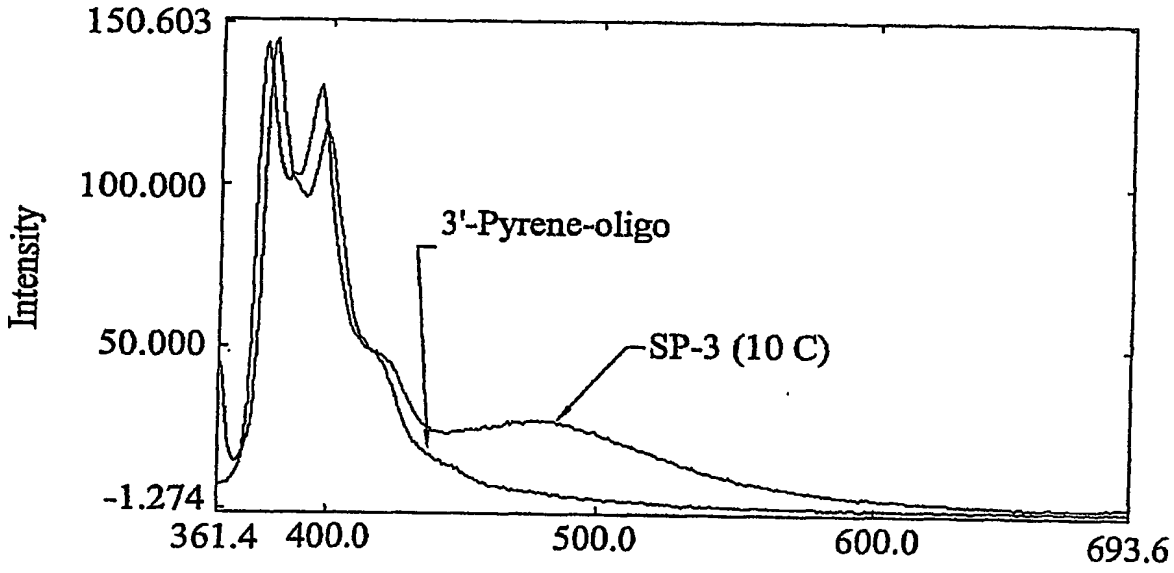

150.603
100.000
50.000
-1.274
Intensity
3'-Pyrene-oligo
SP-3 (10 C)
361.4
400.0
500.0
600.0
693.6
Wavelength (nm)

FIG 29

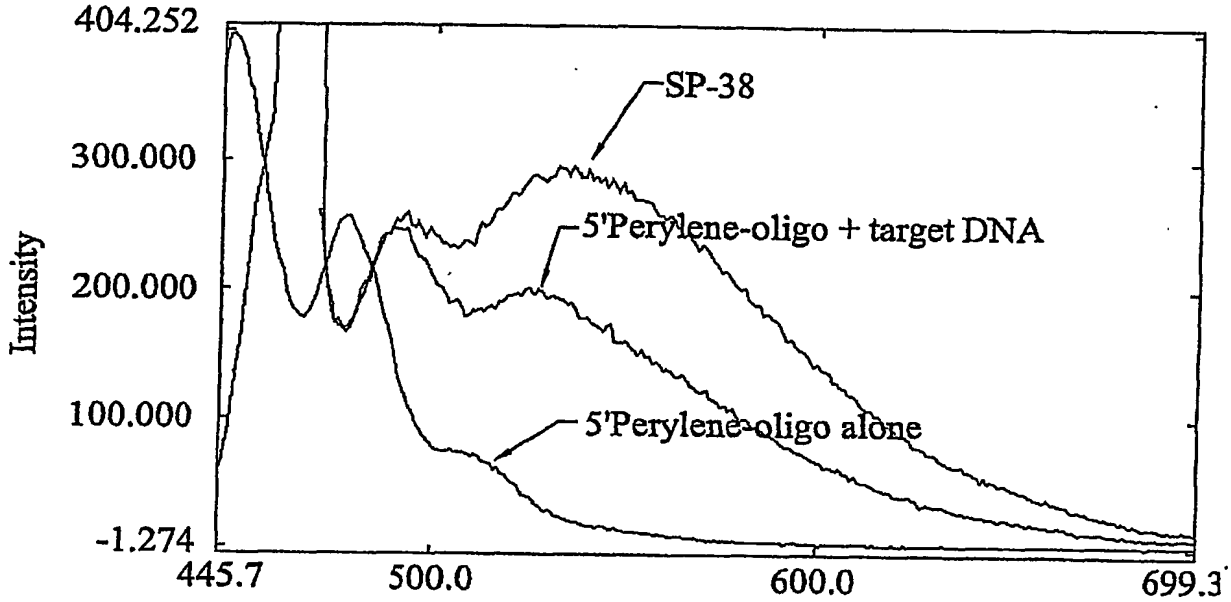

404.252
300.000
200.000
100.000
-1.274
Intensity
SP-38
5'Perylene-oligo + target DNA
5'Perylene-oligo alone
445.7
500.0
600.0
699.3
Wavelength (nm)

FIG 30

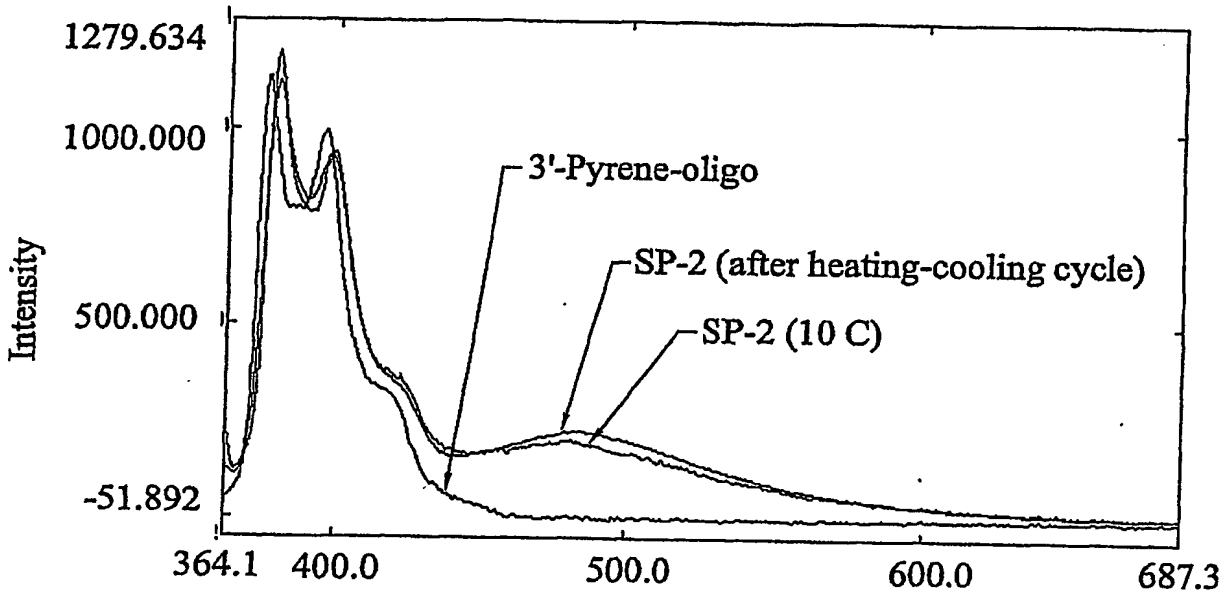

1279.634
1000.000
500.000
-51.892
Intensity
3'-Pyrene-oligo
SP-2 (after heating-cooling cycle)
SP-2 (10 C)
364.1
400.0
500.0
600.0
687.3
Wavelength (nm)

FIG 31

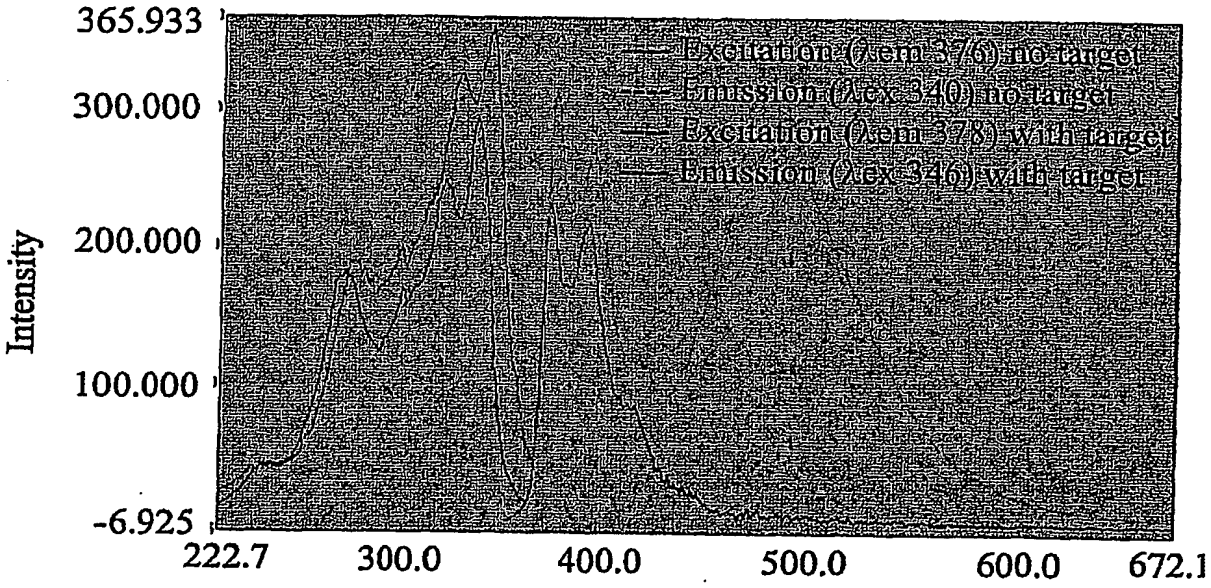

365.933
300.000
200.000
100.000
-6.925
Intensity
222.7
300.0
400.0
500.0
600.0
672.1
Excitation (λem 376) no target
Emission (λex 340) no target
Excitation (λem 378) with target
Emission (λex 346) with target
Wavelength (nm)

FIG 32

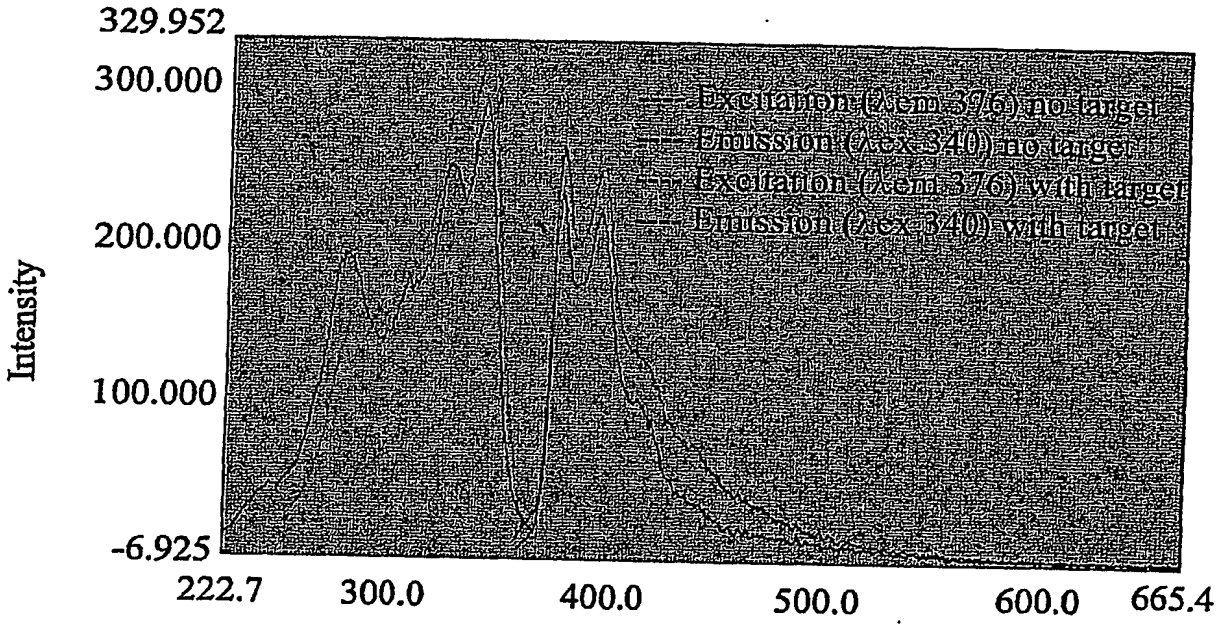

329.952
300.000
200.000
100.000
-6.925
Intensity
Excitation (λem 376) no target
Emission (λex 340) no target
Excitation (λem 376) with target
Emission (λex 340) with target
222.7
300.0
400.0
500.0
600.0
665.4
Wavelength (nm)

FIG 33